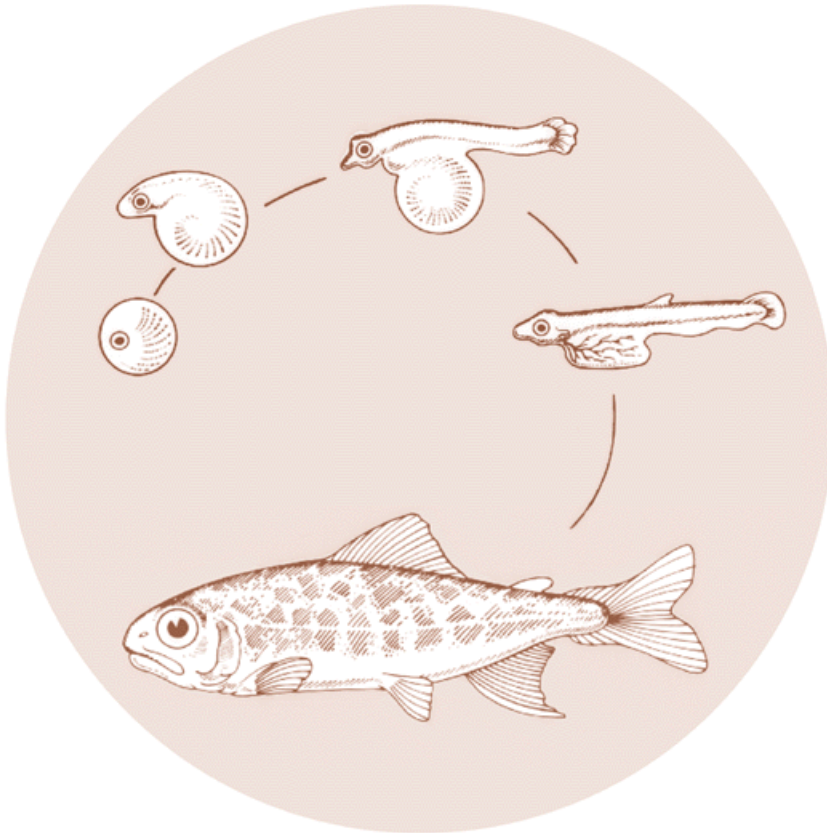


December 1995

ANNUAL CODED WIRE TAG PROGRAM OREGON MISSING PRODUCTION GROUPS

Annual Report 1995



DOE/BP-01610-4



This report was funded by the Bonneville Power Administration (BPA), U.S. Department of Energy, as part of BPA's program to protect, mitigate, and enhance fish and wildlife affected by the development and operation of hydroelectric facilities on the Columbia River and its tributaries. The views of this report are the author's and do not necessarily represent the views of BPA.

This document should be cited as follows:

<i>Garrison, Robert L., Christine Mallette, Mark A. Lewis, William M. Murry - Oregon Dept. of Fish and Game, 1995, Annual Coded Wire Tag Program Oregon Missing Production Groups, 1995 Annual Report, Report to Bonneville Power Administration, Contract No. 1989BP01610, Project No. 198906900, 80 electronic pages (BPA Report DOE/BP-01610-4)</i>
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ANNUAL CODED WIRE TAG PROGRAM
OREGON MISSING PRODUCTION GROUPS

Annual Report 1995

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Contract No. 89-BI-01610

December 1995

TABLE OF CONTENTS

	Page
Abstract	1
Introduction	2
Methods and Materials.....	3
Results.....	3
Discussion.....	5
Big Creek Hatchery.....	5
Klaskanine Hatchery.....	10
Clatsop Economic Development Commission (CEDC).	10
Gnat Creek Hatchery.....	14
Eagle Creek National Fish Hatchery.....	26
Clackamas Hatchery.....	26
Marion Forks Hatchery.....	26
South Santiam Hatchery.....	32
Stayton Rearing Pond.....	32
Roaring River Hatchery.....	32
McKenzie Hatchery.....	36
Leabury Hatchery.....	36
Willamette Hatchery.....	36
Sandy Hatchery.....	36
Cascade Hatchery.....	41
Bonneville Hatchery.....	41
Oxbow Hatchery.....	47
Wahkeena Pond.....	47
Round Butte Hatchery.....	54
Oak Springs Hatchery.....	54
Wizard Falls Hatchery.....	54
Fall River Hatchery.....	54
Irrigon Hatchery.....	54
Umatilla Hatchery.....	57
Lookingglass Hatchery.....	57
Wallowa Hatchery.....	65
Appendix.....	68

ABSTRACT

This annual report is in fulfillment of contract obligations with Bonneville Power Administration which is the funding source for the Oregon Department of Fish and Wildlife's Annual Coded Wire Tag Program - Oregon Missing Production Groups Project.

Tule brood fall chinook were caught primarily in the British Columbia, Washington and northern Oregon ocean commercial fisheries. The up-river bright fall chinook contributed primarily to the Alaska and British Columbia ocean commercial fisheries and the Columbia River gillnet fishery. Contribution of Rogue fall chinook released in the lower Columbia River system occurred primarily in the Oregon ocean commercial and Columbia river gillnet fisheries

Willamette spring chinook salmon contributed primarily to the Alaska and British Columbia ocean commercial, Oregon freshwater sport and Columbia River gillnet fisheries. The up-river stocks of spring chinook contributed primarily to the Columbia River sport and gillnet fisheries.

The up-river stocks of Columbia River summer steelhead contributed primarily to the Columbia River gillnet and in-river freshwater sport fisheries.

Restricted ocean sport and commercial fisheries limited contribution of the Columbia coho released in the Umatilla River that survived at an average rate of 1.05% and contributed primarily to the Washington, Oregon and California ocean sport and commercial fisheries and the Columbia River gillnet fishery. The 1987 to 1991 brood years of coho released in the Yakima River survived at an average rate of 0.64% and contributed primarily to the Washington, Oregon and California ocean sport and commercial fisheries and the Columbia River gillnet fishery.

Survival rates of salmon and steelhead are influenced, not only by factors in the hatchery, disease, density, diet and size and time of release, but also by environmental factors in the river and ocean. These environmental factors are controlled by large scale weather patterns such as El Nino over which man has no influence. Changes in rearing conditions in the hatchery over which man has some limited influence do impact the survival rates, but these impacts are insignificant in comparison to the impacts caused by the weather, river and ocean environmental factors over which man has little or no influence. Man could have some influence over river flow conditions, but political and economic pressures generally outweigh the biological needs of the fish.

Brood years of salmon and steelhead that were in the ocean during the 1983 El Nino event exhibited poor survival all along the Pacific coast of California, Oregon and Washington. However, stocks of chinook and coho that entered the ocean in the fall of 1984 following the El Nino experienced remarkably improved survival rates. In some instance, tule fall chinook experienced survival rates almost ten time higher than for the previous brood years of the same stock. Coho salmon released in the Columbia River in "normal" years generally experienced better survival rates when released later in the spring. However, during the past few years El Nino conditions persisted and all releases of coho survived very poorly.

INTRODUCTION

The Columbia Basin Fish and Wildlife Program Section 203 (a) proposes an interim goal of doubling runs of salmon and steelhead in the Columbia Basin. Doubling means increasing the current run size of 2.5 million to 5 million adult fish. As part of this effort Section 206 (c) states an objective of exploring methods for substantially increasing and improving hatchery production at existing hatcheries. Section 206 (e)(1) states Bonneville shall fund collection of Columbia Basin hatchery data for anadromous fish. These data will include at a minimum: number of returning adults; disposition of returning adults; source and description of brood stock; actions to maintain genetic diversity; and size, location and time of release of juvenile fish.

A system of monitoring and evaluation is necessary to measure present and future levels of fish production by various hatchery and natural fish production components if we are going to be able to evaluate the success of this program in attaining the goal of doubling the size of fish runs.

In September 1989 the Oregon Department of Fish and Wildlife received a grant from the Bonneville Power Administration to begin a project of annually coded-wire tagging missing production groups of anadromous salmonids not currently tagged. Some groups of production fish were already being tagged by other programs, so this contract consisted of filling in the missing production groups for the future data base. This project began in 1990 coded-wire tagging groups of juvenile anadromous salmon produced at Oregon hatcheries.

Tagging will enable evaluation of survival and contribution rates. As the fish mature and are captured in various fisheries or return to release/recapture facilities, they are sampled to recover coded-wire tags. All recoveries of coded-wire tagged fish are reported to the Pacific States Marine Fisheries Commission. Release and recovery information is stored along with sampling and mark/unmarked release ratios. This information is then used to estimate survival rates for each production lot of fish reared and released at each hatchery. The number and

rate that each hatchery production group of fish contribute to the various fisheries is then estimated by recovery area and brood year. This information is then used to evaluate effectiveness of each hatchery and various rearing and release practices conducted by the hatcheries. Evaluation of the various hatchery and natural production projects will be needed to measure the effectiveness of any mitigation program and to help direct future efforts in maintaining or enhancing fish runs in the Columbia Basin. This information will also be valuable to salmon harvest managers in developing scenarios that will allow harvest of excess hatchery fish while protecting threatened and endangered natural stocks.

Methods and Materials

The goal of this program is to develop the ability to estimate hatchery production survival values and evaluate effectiveness of Oregon hatcheries. To accomplish this goal, work has progressed under three objectives.

Objective 1. Implement the project by tagging missing production groups within hatcheries to assure each production group is identifiable to allow future evaluation upon recovery of tag data.

Objective 2. Recover coded-wire tags from snouts of fish tagged under Objective 1.

Objective 3. Prepare an annual report for all Oregon fish hatcheries in the Columbia Basin in a Propagation Evaluation Format. The annual report will include a Propagation Evaluation Summary format for each tag code released by an ODFW hatchery in the Columbia Basin. The hatchery summary will include estimates of survival and contribution for each hatchery represented by a coded-wire tag release group. The information will be obtained from the latest information available on the Pacific States Marine Fish Commission's computer data base at the time of report preparation.

RESULTS

Objective 1. We completed coded-wire tagging and ad-clipping a total of about 846,363 juvenile 1992 and 1993 brood spring and fall chinook and coho salmon (Table 1). Of this total, the USFW Service tagged 27,637 coho for us at their Eagle Creek Hatchery. The total represents 25 different tag groups. ODFW's estimated total operational costs (without administrative overhead) averaged between \$76 and \$116 per thousand fish tagged.

Table 1. Fish Tagged and Respective Estimated Operational Costs.
(September 1, 1994 to August 31, 1995)

Period	Location	Brood	Sp.	CWT'd	Grps	\$/K	Total \$
Sept, 94	S. Santiam	93	CHS	26,551	1	\$116	3,079.90
Sept, 94	Cascade	93	CO	165,202	6	\$76	12,553.39
Oct, 94	Eagle Creek*	93	CO	27,637	2	\$0	0
Oct, 94	Sandy	93	CO	113,519	2	\$80	9,01.71
Feb, 95	Bonneville	94	CHF	163,996	6	\$79	12,935.94
Mar, 95	Big Creek	94	CHF	53,581	1	\$95	5,078.36
Mar, 95	Stayton	94	CHF	53,492	1	\$84	4,469.48
Apr, 95	Big Creek	94	CHF	108,510	2	\$108	11,746.80
Apr, 95	Oxbow	94	CHS	54,728	2	\$87	4,756.21
Jun, 95	Willamette	94	CHS	52,184	1	\$79	4,125.29
Aug, 95	S. Santiam	94	CHS	26,963	21	\$105	2,836.48
	TOTALS			846,363	25		70,603.56

* Coordinated tagging with USFW Services

Objective 2. We completed processing a total of 23,670 tags at the laboratory in Clackamas. The total consisted of fish from sport, commercial, ceremonial, hatchery, spawning ground surveys, and miscellaneous other fisheries (Table 2). We verified 1,423 ODFW tags recovered and returned to us by other agencies.

Table 2. CWT's Recovered at Clackamas. (Oct. 94 to Sept. 95)

FISHERY	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Total
River Sport	19	257	242	16	260	79	152	281	58	44	17	75	1,499
Test Fishery	8	0	0	0	0	0	0	10	0	0	0	0	18
Estuary Sport	5	40	0	0	0	1	0	0	0	0	0	31	77
Treaty Gillnet	192	0	0	0	23	15	0	0	0	0	70	600	900
Non-Treaty Gillnet	139	0	0	0	0	0	0	0	0	0	0	0	139
Youngs Bay Gillnet	830	107	0	0	0	0	0	14	72	0	0	338	1,361
Ocean Sport/Troll	0	4	287	0	0	0	0	82	0	0	238	589	1,200
Hatchery Returns	153	1,765	3,779	1,385	3,953	2,953	2,138	0	152	775	113	130	17,296
Spawning Ground	33	263	230	14	68	26	0	4	0	8	0	0	646
Whiting Fishery	0	0	0	0	0	0	0	100	0	0	72	0	172
River Seine	0	0	0	0	0	19	0	0	0	0	24	24	67
Dead Fish Survey	0	0	0	0	0	0	0	0	0	11	0	0	11
Smolt Recoveries	0	0	0	221	0	0	0	0	14	0	0	0	235
Ceremonial Subsistence	7	0	0	0	0	3	0	31	6	2	0	0	49
TOTAL	1,386	2,436	4,538	1,635	4,304	3,096	2,290	552	302	840	534	1,787	23,670
Verifications	20	0	0	8	0	260	0	48	371	573	0	153	1,423

Objective 3. We prepared summaries of available coded-wire tag recovery information for all groups of tagged fish released from Oregon Department of Fish and Wildlife hatcheries in the Columbia basin and supplied them in the Propagation Evaluation Format to the Bonneville Power Administration Program Manager. Summaries of the coded-wire tag recovery and survival information are presented in Appendix Table 1. Charts depicting the latest five year average distribution of catch and estimated survival rates for each stock and hatchery are presented in Figures 1 - 52.

Discussion

The average percent recovery (by fishery) for the last 5 completed brood years (chinook 1985 to 1989 broods; coho 1987 to 1991 broods; steelhead 1986 to 1990 broods) are presented in Appendix Table 1.

Big Creek Hatchery

Big Creek Hatchery is located 2 miles south of Knappa off Highway 30 near the mouth of the Columbia River. The hatchery was originally built in 1939-41 and was operated by the Oregon Fish commission. Big Creek Hatchery rears and releases tule and Rogue fall chinook, coho salmon, and winter steelhead.

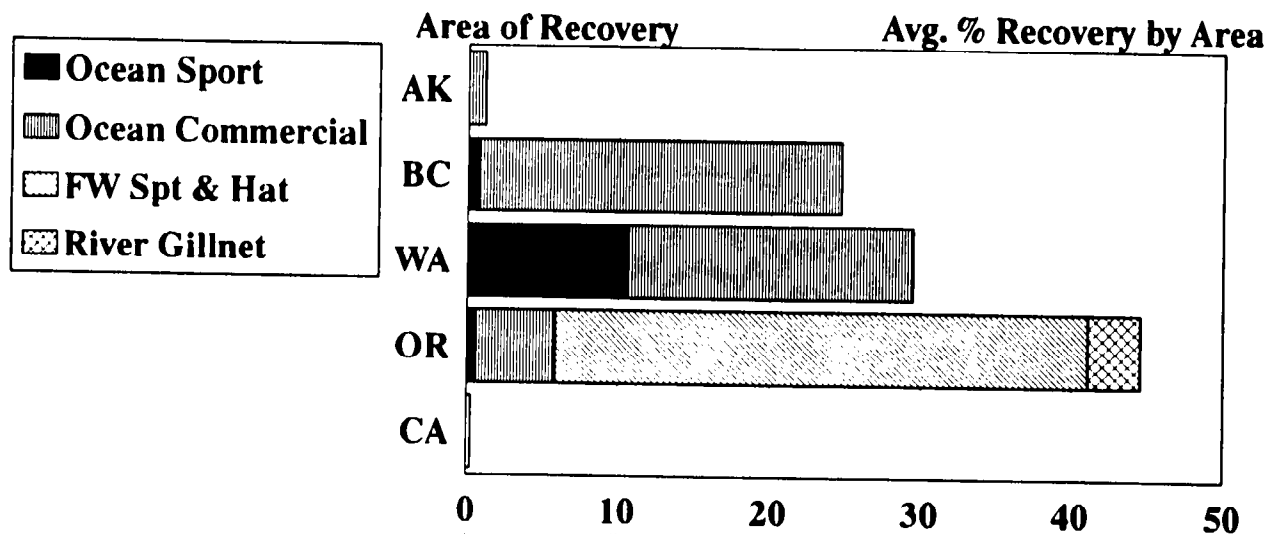
Tule 1986 to 1989 brood fall chinook survived at a rate of 0.13%. They were caught primarily in the British Columbia, Washington and northern Oregon ocean commercial and Oregon freshwater fisheries (Figure 1).

Rogue fall chinook were originally released at Big Creek as an experiment beginning with the 1982 brood. Good survival and contribution rates to Oregon have caused this program to be expanded beyond the pilot production level. The 1994 return of 2,143 Rogue fall chinook to Big Creek provided an estimated 2,971,295 eggs. Preliminary returns during 1995 project an estimated egg take of over 3.4 million eggs. Eggs in excess to the needs of maintaining the broodstock at Big Creek Hatchery will be reared for acclimation in the Young's Bay net pens (operated by the Clatsop Economic Development Commission) and released to enhance the development of a very popular terminal gillnet fishery. Rogue fall chinook from the 1985 to 1989 broods averaged survival at a rate of 1.76 %. The largest contribution occurred in the Oregon ocean commercial and river freshwater and gillnet fisheries (Figure 2).

The 1987 to 1991 brood Big Creek coho survived at an average rate of 2.13 %. They contributed well to the Oregon ocean sport and commercial fisheries (Figure 3).

Big Creek Tule Fall Chinook Released in Big Creek

1986 - 1989 Brood Year



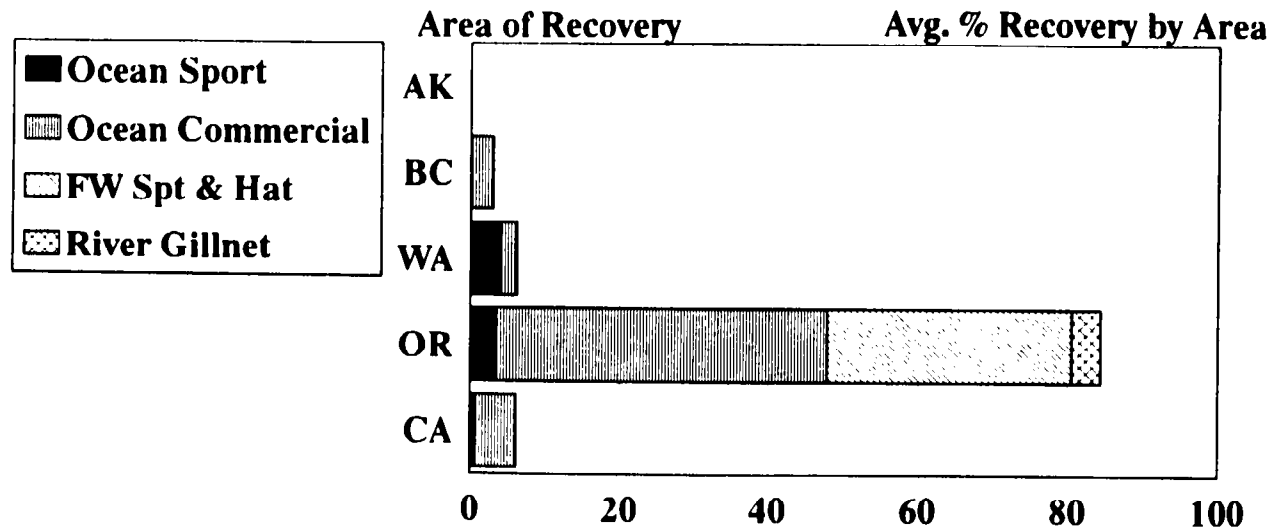
	AK	BC	WA	OR	CA
Ocean Sport		0.8	10.7	0.6	0
Ocean Commercial	1.1	23.9	18.8	5.2	0.3
FW Spt & Hat				35.3	
River Gillnet				3.4	

Avg. .13 % Survival

Figure 1.

Rogue Fall Chinook Released in Big Creek

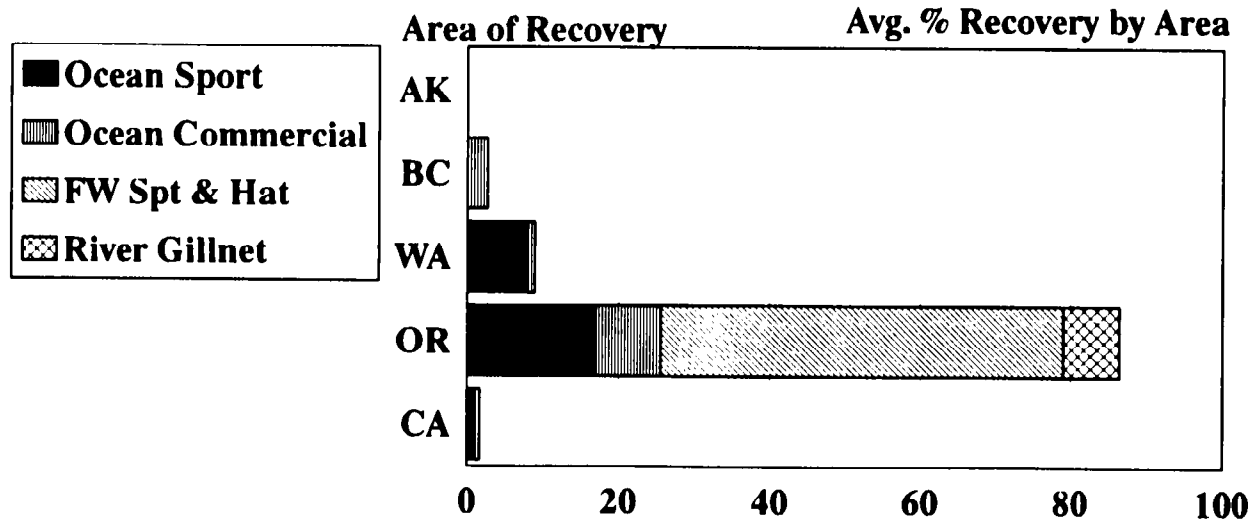
1985 - 1989 Brood Year



	AK	BC	WA	OR	CA
Ocean Sport		0.2	4.2	3.6	0.8
Ocean Commercial		2.9	2.1	44.2	5.4
FW Spt & Hat				32.7	
River Gillnet				3.9	
Avg. 1.76 % Survival					

Figure 2.

Big Creek Coho Released in Big Creek 1987 - 1991 Brood Year



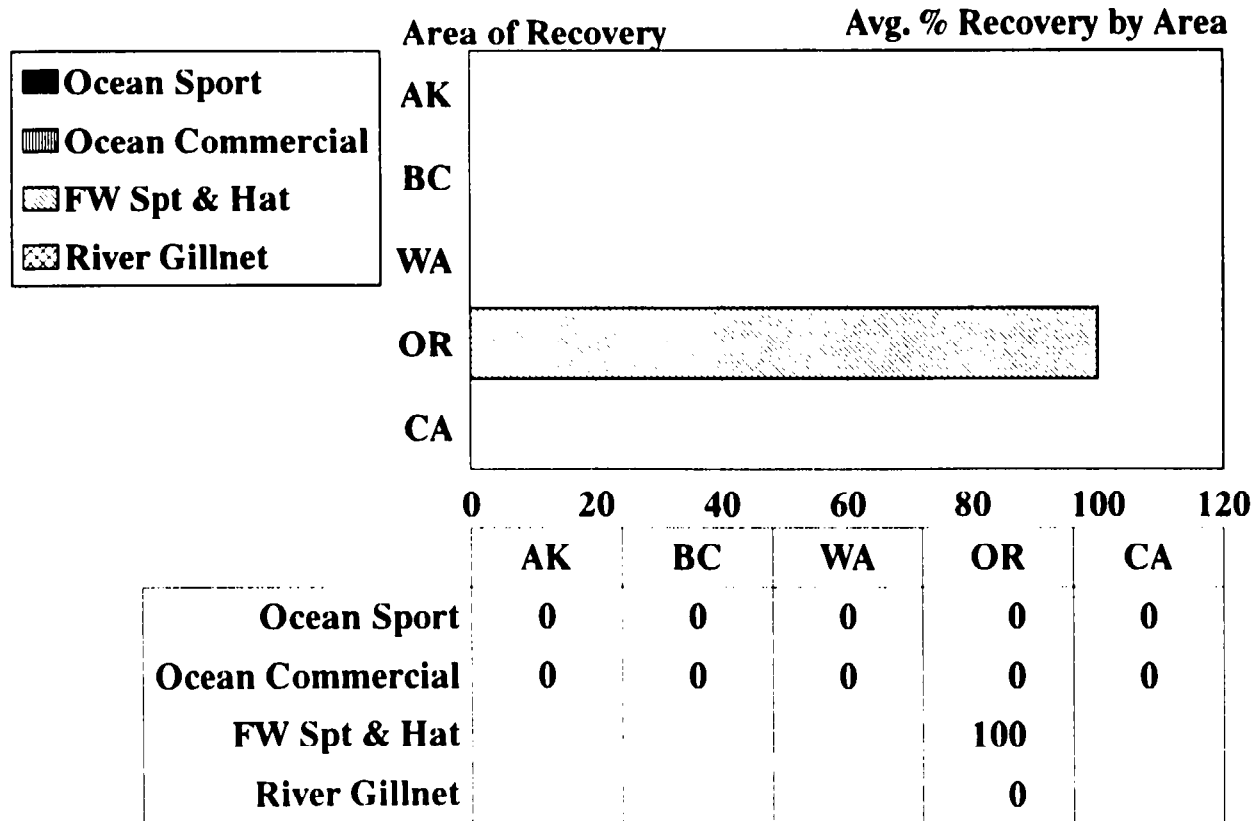
	AK	BC	WA	OR	CA
Ocean Sport	0	0	8.1	17	1.1
Ocean Commercial	0	2.7	0.9	8.5	0.6
FW Spt & Hat				53.5	
River Gillnet				7.5	

Avg. 2.13 % Survival

Figure 3.

Big Creek Coho Released in Tualatin River

1991 Brood Year



Avg. 0.04 % Survival

Figure 4.

The 1991 brood Big Creek coho released in the Tualatin River survived at a rate of 0.04 % and was recovered in Oregon freshwater fisheries (Figure 4).

Only small experimental groups of chum salmon were previously reared at Big Creek and none of these fish have been coded-wire tagged for evaluation.

Winter steelhead are reared at Big Creek but none have been marked with coded-wire tags for evaluation.

Klaskanine Hatchery

Klaskanine Hatchery is located 21 miles southeast of Astoria on Highway 202 on the Klaskanine River. The hatchery originally built in 1913 was expanded and remodeled in 1953. Klaskanine Hatchery presently raises tule fall chinook, coho salmon and winter steelhead trout.

The 1986 to 1988 brood of tule fall chinook released from Klaskanine Hatchery survived at a rate of 0.08 %. They contributed primarily to the British Columbia, Washington, and Oregon ocean commercial and the Columbia River and Youngs Bay gillnet fisheries (Figure 5).

The 1987 to 1991 brood Klaskanine coho produced an average survival at a rate of 1.93 %. They contributed primarily to the Oregon ocean sport, commercial and the Columbia River and Youngs Bay gillnet fisheries (Figure 6).

Winter steelhead are reared at Klaskanine Hatchery but none have been marked with coded-wire tags for evaluation.

Clatsop Economic Development Commission (CEDC)

CEDC operates a series of freshwater ponds and saltwater net pens in Youngs Bay near Astoria. CEDC releases coho and chinook salmon.

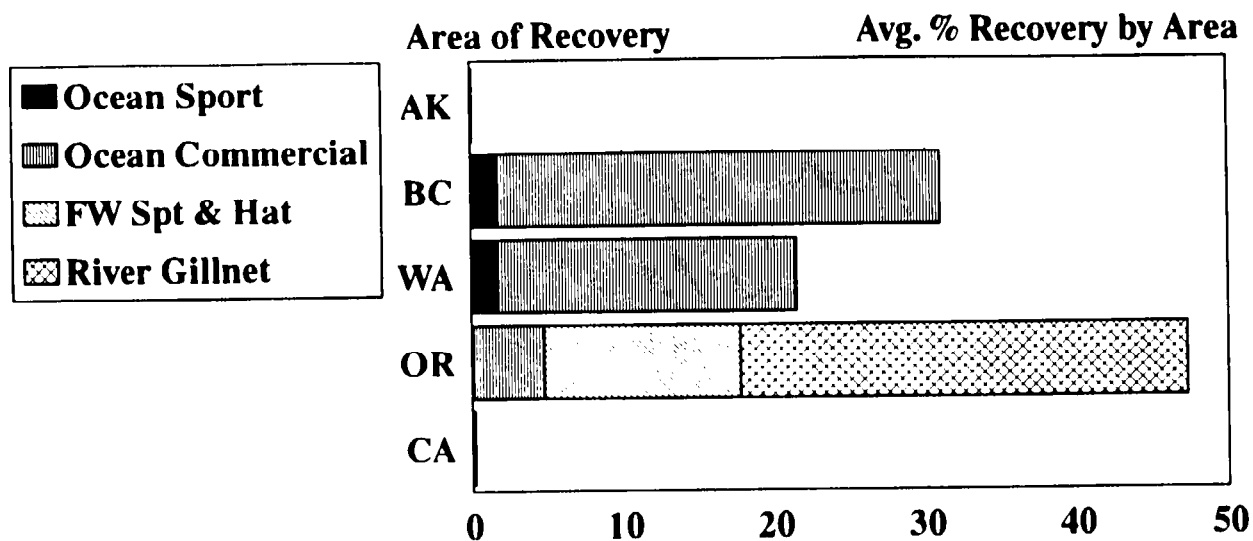
The 1985 to 1987 broods tule fall chinook released in the South Fork Klaskanine River averaged a survival rate of 0.08 %. They were caught primarily in the British Columbia ocean commercial and the lower Columbia River and Youngs Bay gillnet fisheries (Figure 7).

The 1985 to 1989 brood Rogue fall chinook reared by CEDC in net pens and released in the Klaskanine River averaged a survival rate of 1.39 %. They were caught primarily in the Oregon commercial troll and Youngs Bay gillnet fisheries (Figure 8).

The 1990 Big Creek coho stock reared by CEDC and released in Youngs Bay survived at a rate of 1.13 %. They were harvested

Klaskanine Hat. (Big Creek Stk) Tule Fall Chinook Released in Klaskanine R

1986 - 1988 Brood Year

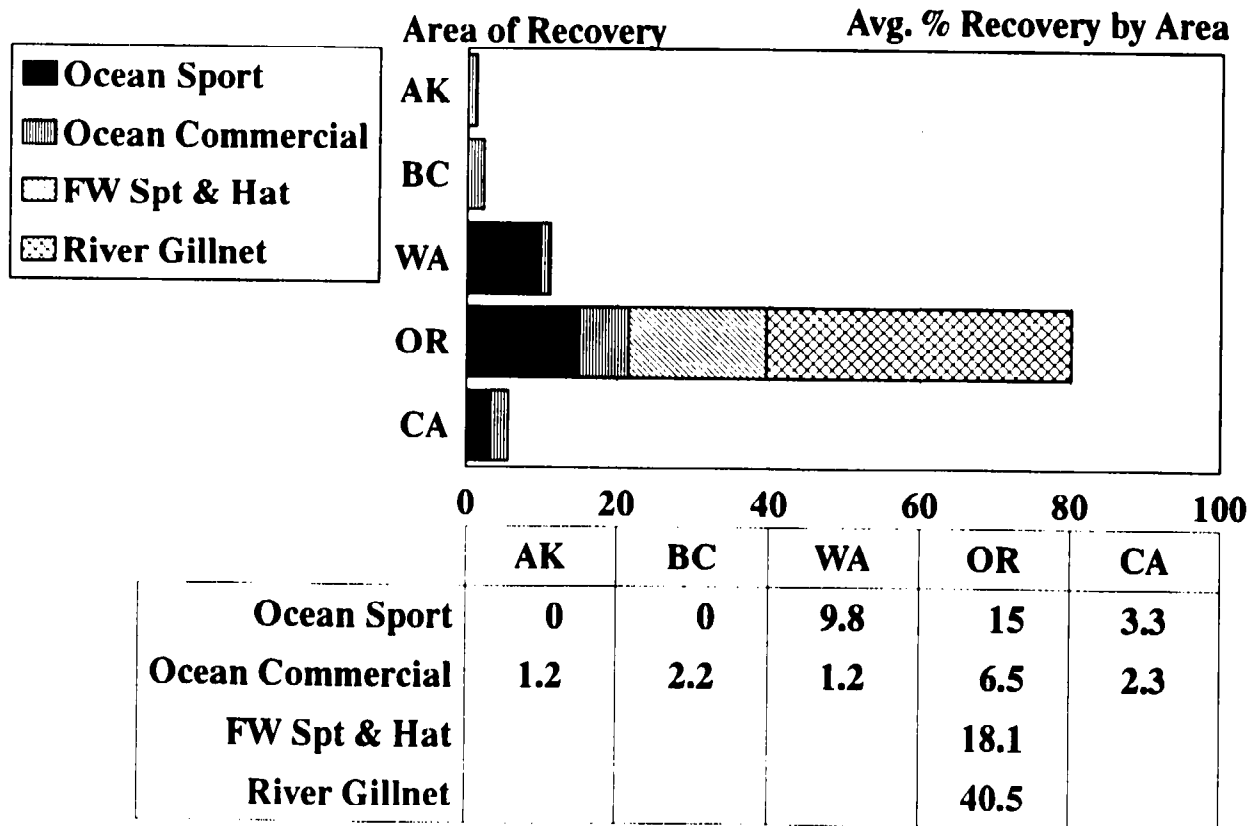


	AK	BC	WA	OR	CA
Ocean Sport		1.8	1.8	0.1	0.1
Ocean Commercial	0.1	29.2	19.7	4.7	0.1
FW Spt & Hat				13	
River Gillnet				29.5	
Avg. 0.08 % Survival					

Figure 5.

Klaskanine Coho Released in Klaskanine R

1987 - 1991 Brood Year



Avg. 1.93 % Survival

Figure 6.

S.F. Klaskanine Pond Tule Fall Chinook **Released in S. F. Klaskanine R.** **1985 - 1987 Brood Year**

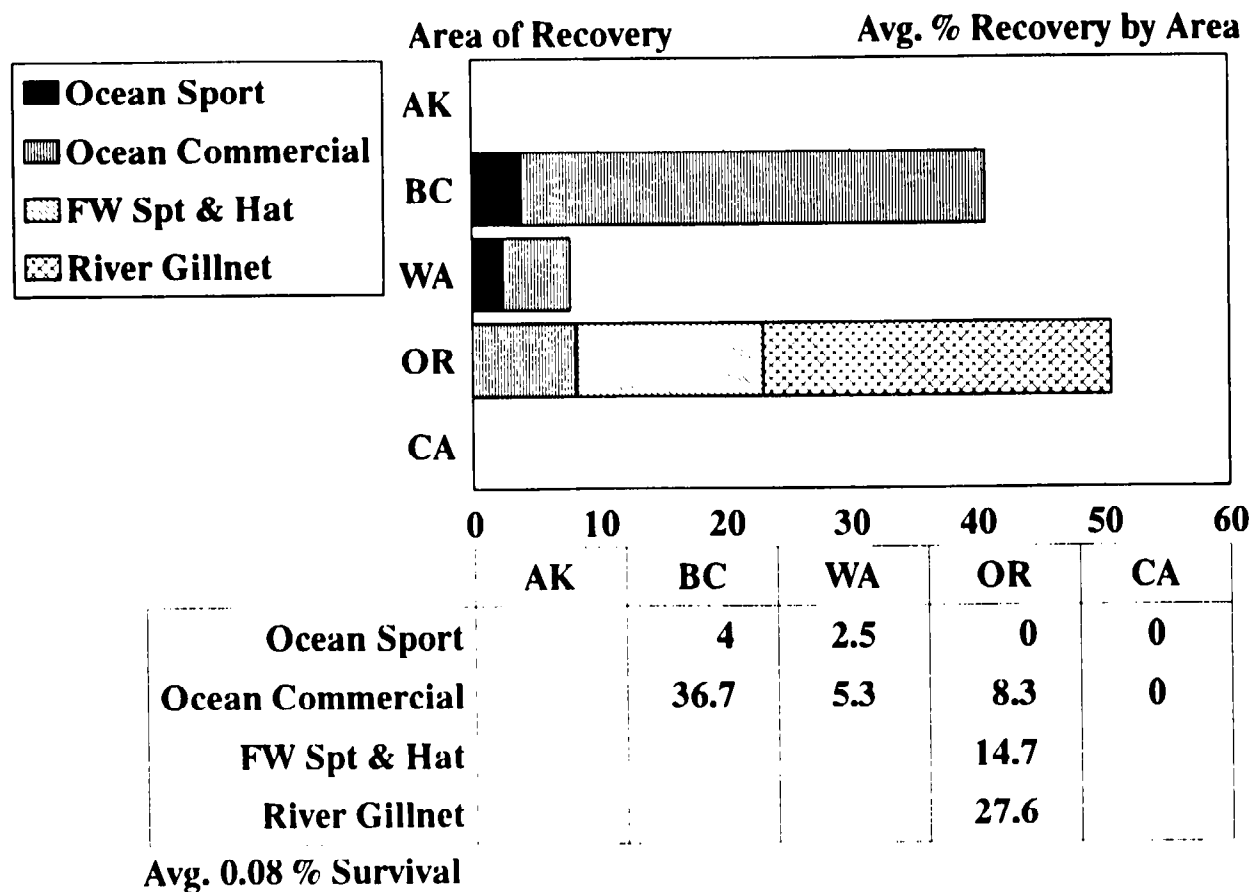


Figure 7.

primarily in the Oregon ocean commercial and sport fisheries and the lower Columbia and Youngs Bay gillnet fisheries (Figure 9).

The 1987 brood Sandy River coho stock released in the South Fork Klaskanine River survived at a rate of 1.53 % and was caught primarily in the Washington and Oregon ocean sport and commercial fisheries and the Columbia River gillnet fishery (Figure 10).

The 1987 and 1990 brood Sandy River coho stock acclimated in the CEDC freshwater ponds and released in Youngs River survived at an average rate of 1.50 % (Figure 11).

The 1987 to 1991 brood South Fork Klaskanine coho released in Klaskanine River South Fork survived at an average rate of 3.30 % (Figure 12).

The 1990 and 1991 brood Klaskanine coho stock acclimated in the CEDC salt water net pens and released in the South Fork Klaskanine River (Youngs Bay) survived at a rate of 1.79 % (Figure 13).

The 1988 to 1991 brood Clackamas coho stock acclimated in the Youngs Bay saltwater net pens and released in Youngs Bay survived at a rate of 3.37 % (Figure 14).

The 1991 brood Tanner Creek coho stock acclimated in the Youngs Bay saltwater net pens and released in the South Fork Klaskanine River (Youngs Bay) survived at a rate of 2.90 % (Figure 15).

The 1990 brood Kalama coho stock acclimated in the Youngs Bay saltwater net pens and released in the South Fork Klaskanine River (Youngs Bay) survived at a rate of 0.13 % (Figure 16). This is a north migrating stock and contributed more to British Columbia and Washington and less to California than the 1990 brood south migrating stocks (Klaskanine, Sandy and Big Creek).

The 1988 and 1989 brood Willamette stock spring chinook reared in the South Fork Klaskanine Hatchery and released in the South Fork Klaskanine River survived at a rate of >0.02 % (Figure 17).

The 1988 and 1989 brood Willamette stock spring chinook reared in the South Fork Klaskanine Hatchery and released in the Youngs River survived at a rate of 0.27 % (Figure 18).

Gnat Creek Hatchery

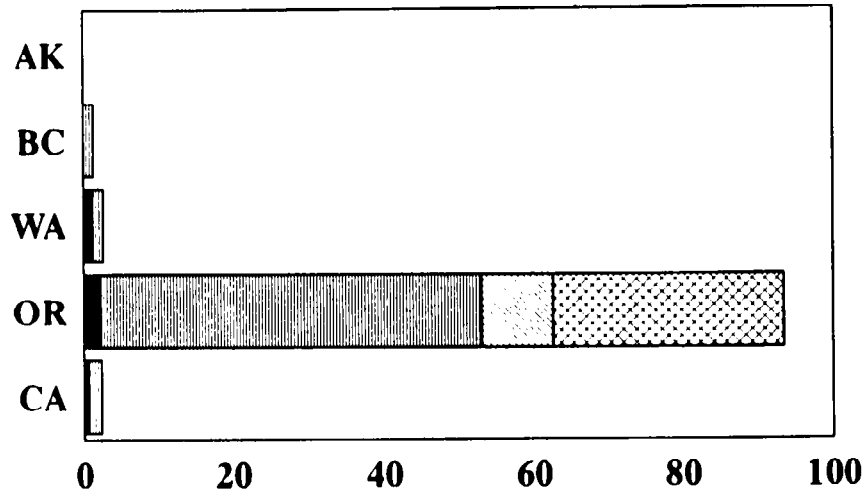
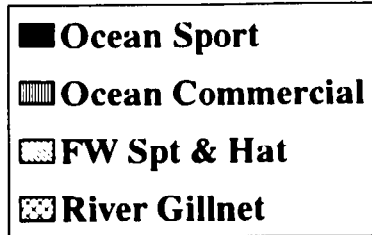
Gnat Creek Hatchery is located east of Knappa off Highway 30 on Gnat Creek a tributary to the Lower Columbia River. Gnat Creek Hatchery releases summer and winter steelhead and cutthroat trout. None of these groups of fish have been coded-wire tagged for evaluation.

Rogue Fall Chinook (S.F. Klaskanine Hat) Released in Klaskanine R

1985 - 1989 Brood Year

Area of Recovery

Avg. % Recovery by Area



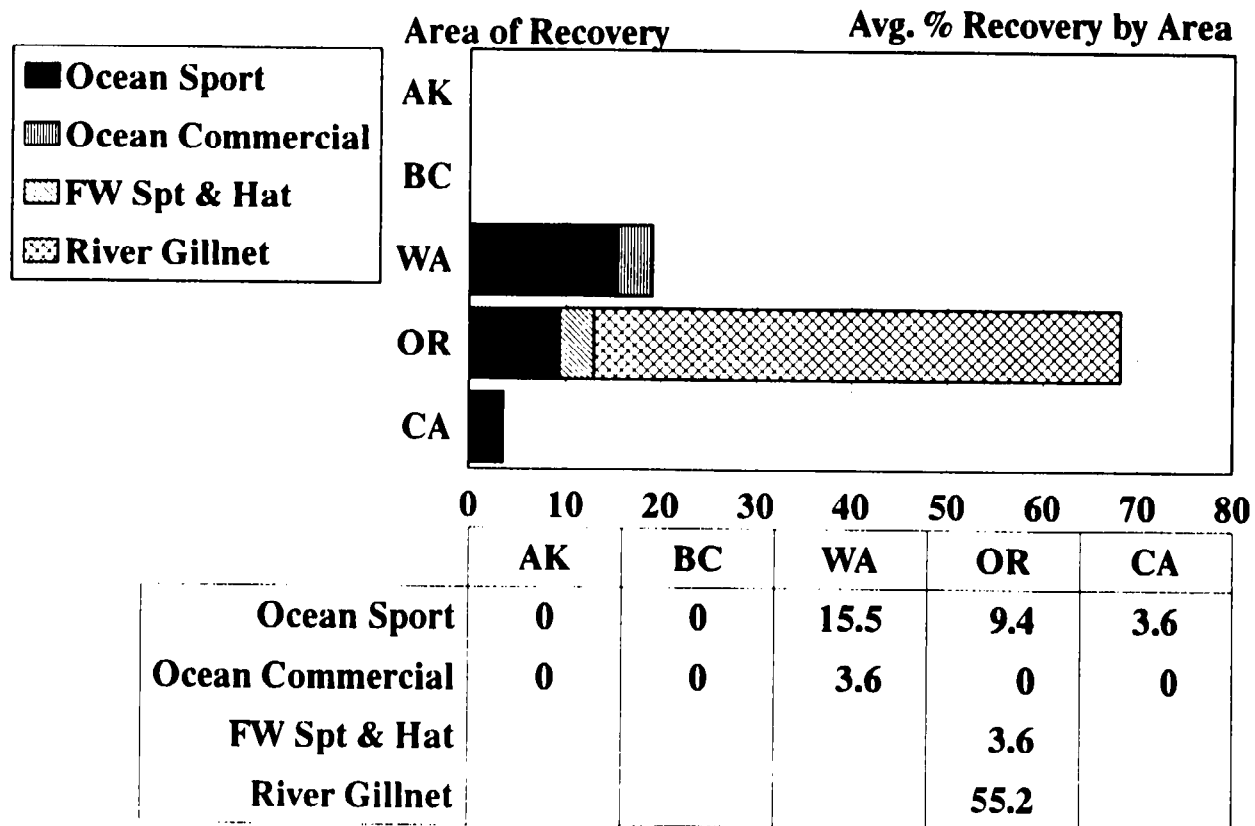
	AK	BC	WA	OR	CA
Ocean Sport	1.3			2.3	0.7
Ocean Commercial		1.4	1.4	50.7	1.7
FW Spt & Hat				9.7	
River Gillnet				30.8	

Avg. 1.39 % Survival

Figure 8.

SF Klaskanine Pond (Big Creek Stock) Coho Released in Youngs Bay

1990 Brood Year

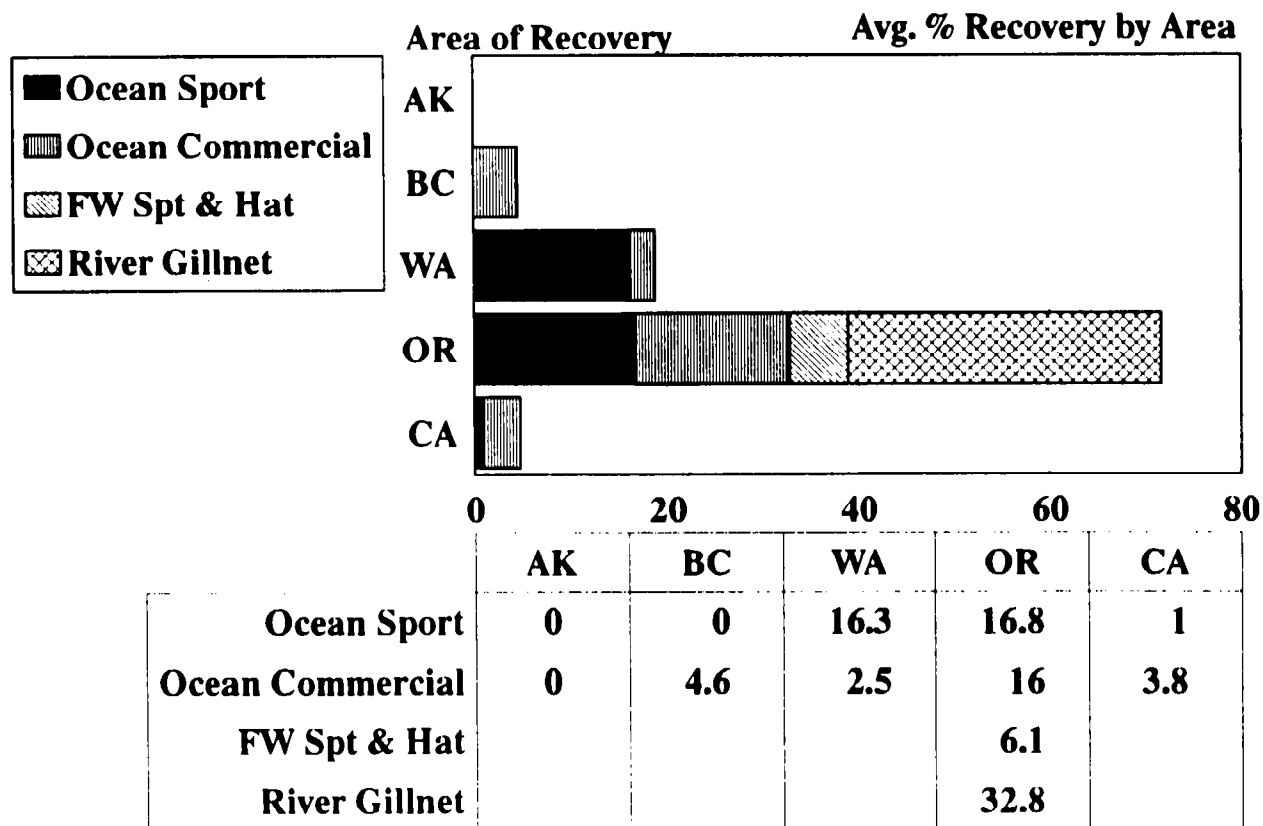


Avg. 1.13 % Survival

Figure 9.

SF Klaskanine Pond Coho (Sandy R. Stock) Released in Klaskanine R , S. Fork

1987 Brood Year

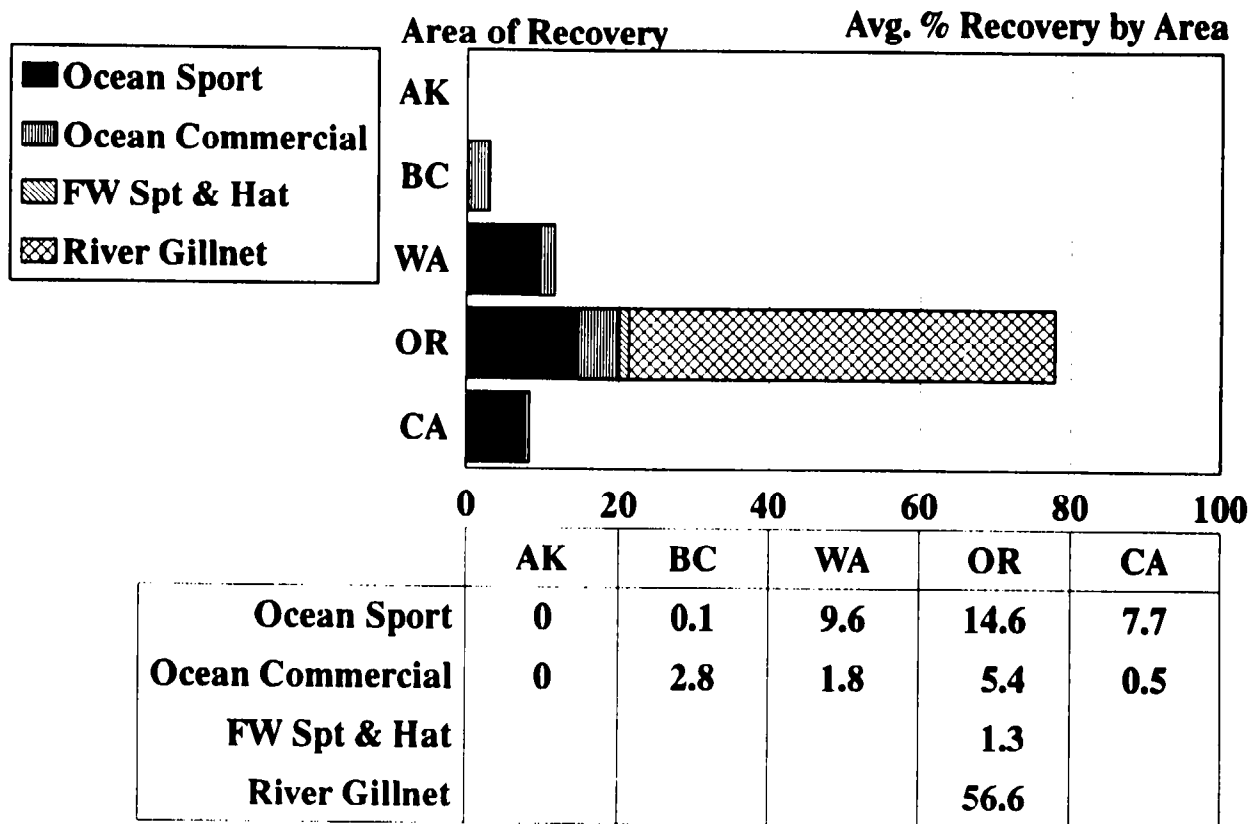


Avg. 1.53 % Survival

Figure 10.

SF Klaskanine Pond (Sandy R. Stock) Coho Released in Youngs Bay

1987 & 1990 Brood Years

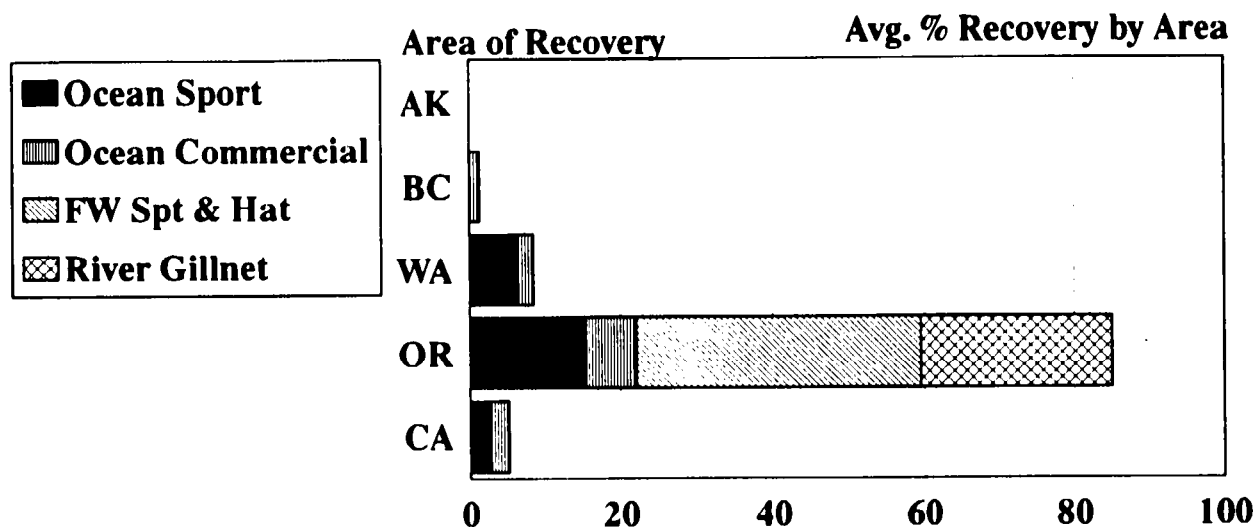


Avg. 1.50 % Survival

Figure 11.

SF Klaskanine Pond Coho Released in Klaskanine R , S. Fork

1987 to 1991 Brood Years



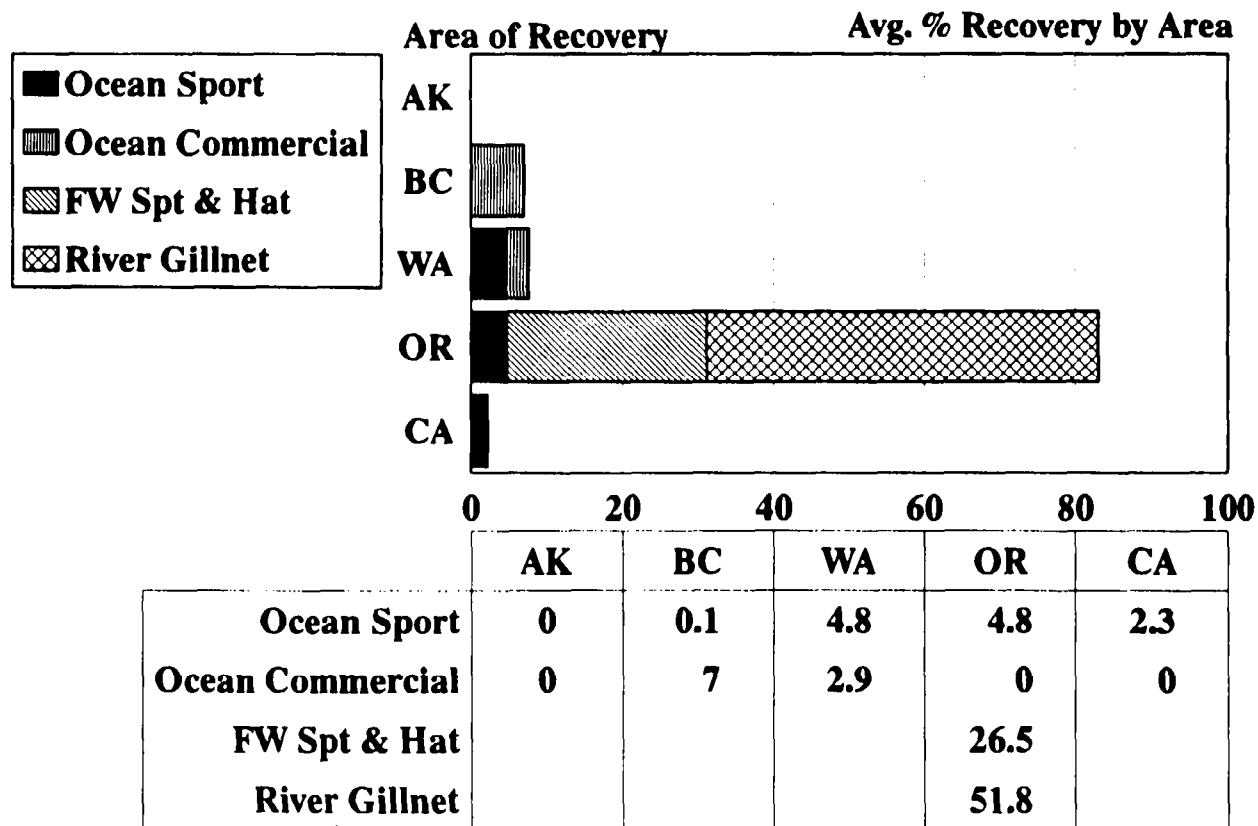
	AK	BC	WA	OR	CA
Ocean Sport	0	0.1	6.5	15.4	2.8
Ocean Commercial	0	1.2	2	6.7	2.4
FW Spt & Hat				37.5	
River Gillnet				25.4	

Avg. 3.30 % Survival

Figure 12.

SF Klaskanine Pond (Klaskanine Stock) Coho Released in Youngs Bay

1990 - 1991 Brood Year

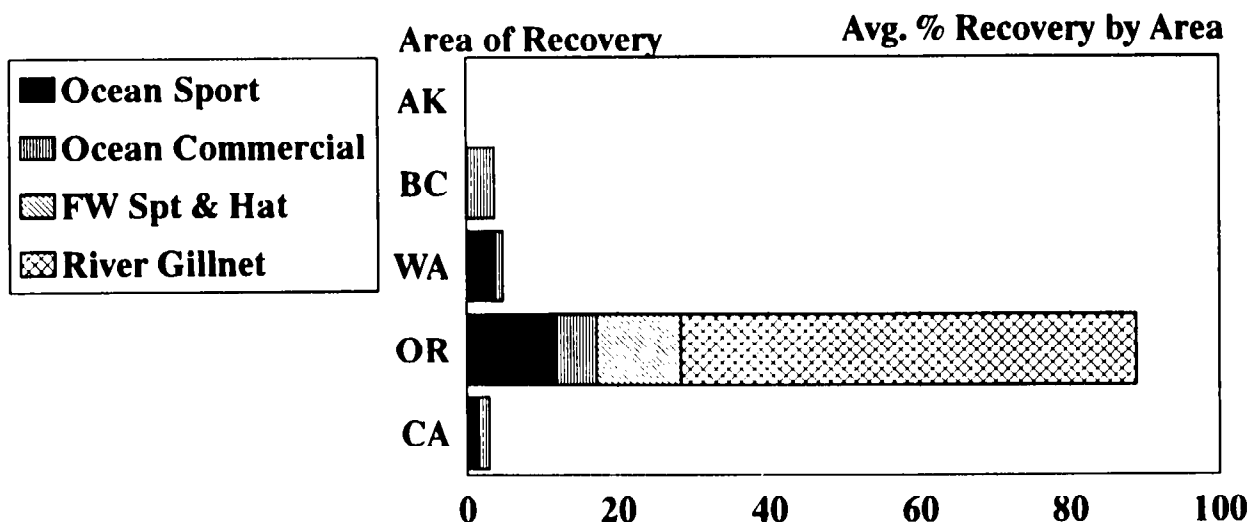


Avg. 1.79 % Survival

Figure 13.

SF Klaskanine Pond (Clackamas R. Stock) Coho Released in Youngs River

1988 - 1991 Brood Years



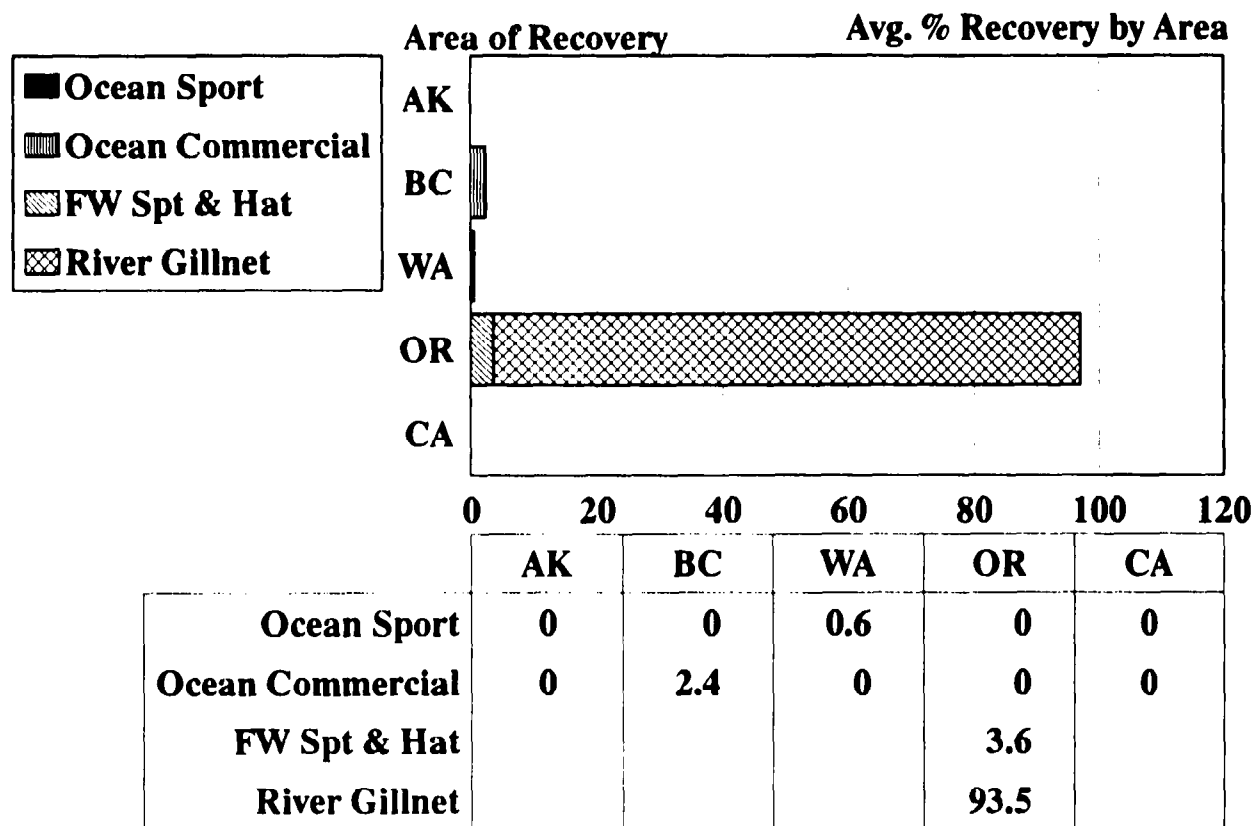
	AK	BC	WA	OR	CA
Ocean Sport	0	0.2	3.9	12	1.6
Ocean Commercial	0	3.5	0.9	5.2	1.3
FW Spt & Hat				11.3	
River Gillnet				60.3	

Avg. 3.37 % Survival

Figure 14.

SF Klaskanine Pond (Tanner Cr. Stock) Coho Released in Youngs Bay

1991 Brood Year

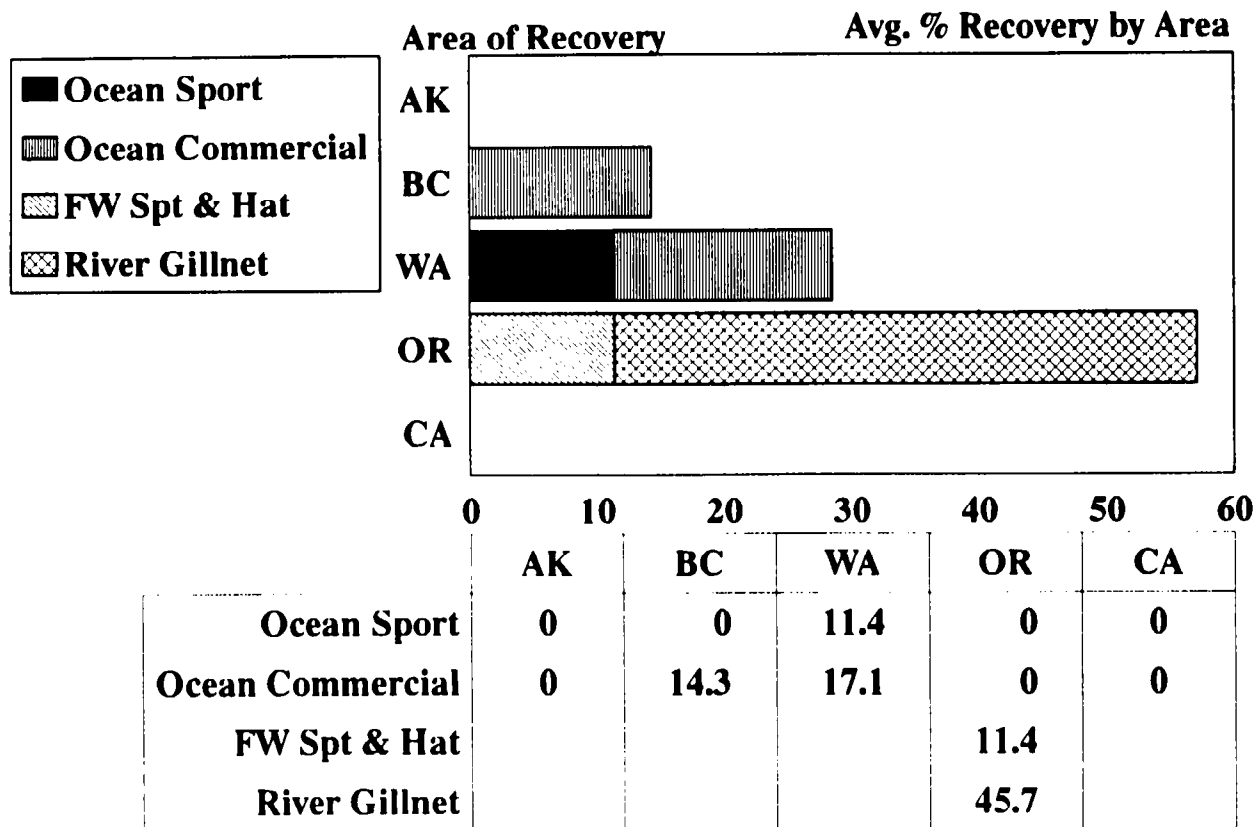


Avg. 2.90 % Survival

Figure 15.

SF Klaskanine Pond (Kalama R. Stock) Coho Released in Youngs Bay

1990 Brood Year

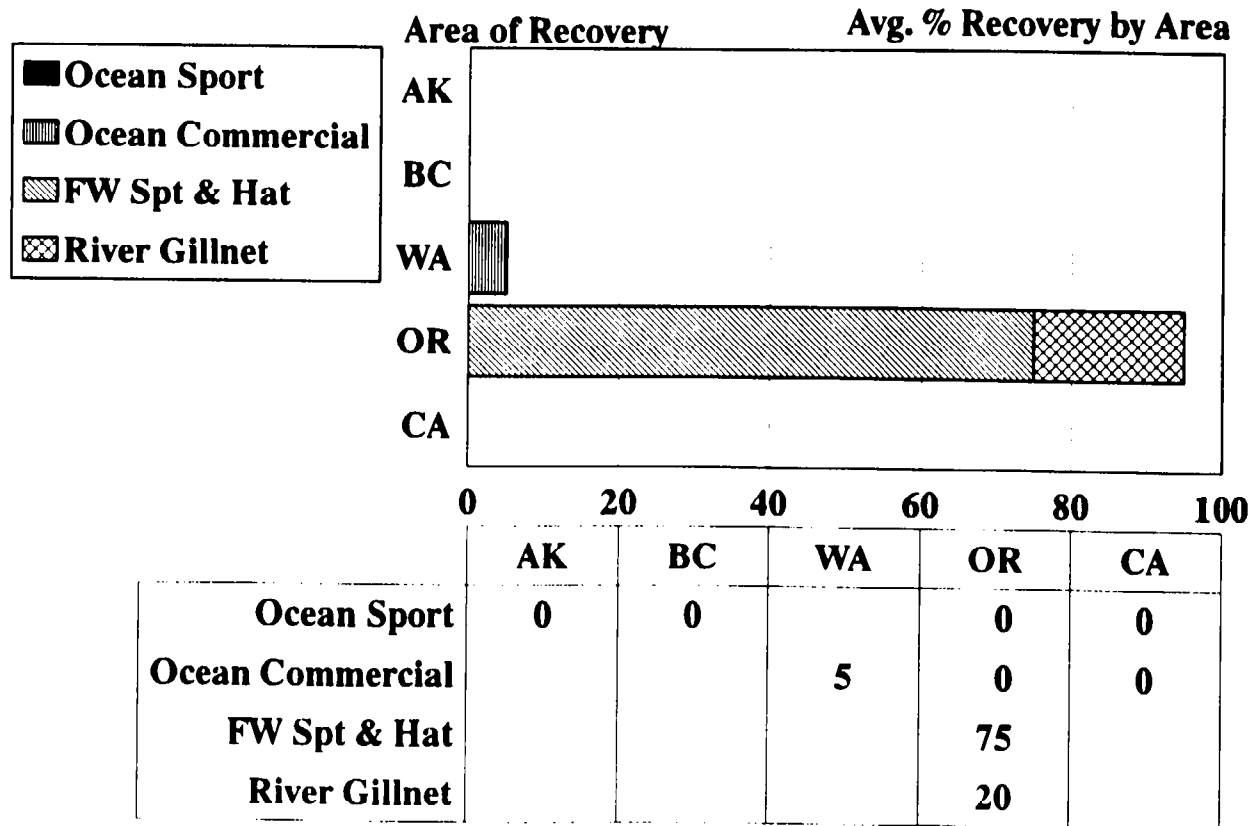


Avg. 0.13 % Survival

Figure 16.

M. Willamette Spring Chinook [S. F. Klaskanine Hat] Released in Klaskanine R. South Fork

1988 - 1989 Brood Year

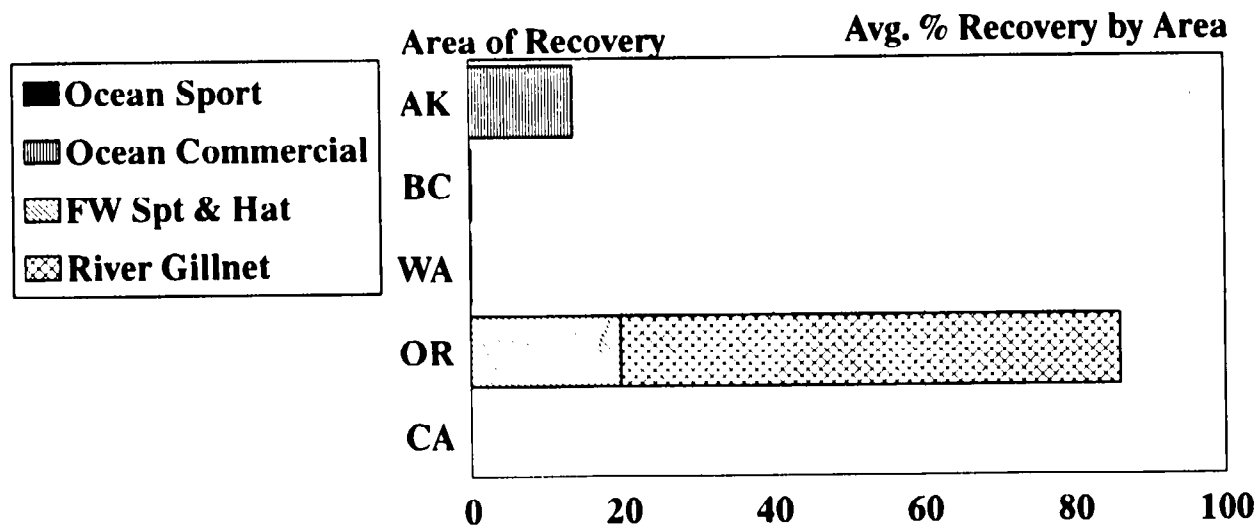


Avg. > 0.02 % Survival

Figure 17.

M. Willamette Spring Chinook [S. F. Klaskanine Hat] Released in Youngs River

1988 - 1989 Brood Year



	AK	BC	WA	OR	CA
Ocean Sport	0	0	0	0	0
Ocean Commercial	13.7	0.2	0.1	0	0
FW Spt & Hat				19.8	
River Gillnet				66.3	

Avg. 0.27 % Survival

Figure 18.

Eagle Crook National Fish Hatchery

Eagle Creek National Fish Hatchery is located on Eagle Creek a tributary of the Clackamas River southeast of Portland. Eagle Creek Hatchery presently rears and releases coho salmon in Eagle Creek. Additional coho are reared for ODFW and are transported to the CEDC net pens for acclimation in Youngs Bay near Astoria.

Clackamas Hatchery

Clackamas Hatchery is located on the Clackamas River 4 miles west of Estacada near McIver Park. Clackamas Hatchery rears and released spring chinook salmon, summer and winter steelhead trout.

The 1985 to 1989 brood Clackamas spring chinook released in the Clackamas River survived at an average rate of 0.59 %. They were caught primarily in the Oregon freshwater sport fishery with lesser contributions to the Alaska and British Columbia ocean commercial and Columbia River gillnet fisheries (Figure 19).

The 1986 to 1987 brood Mid Willamette stock spring chinook released in the Clackamas River survived at an average rate of 1.65 %. They were caught primarily in the Oregon freshwater sport fishery with lesser contributions to the Alaska and British Columbia ocean commercial and Columbia River gillnet fisheries (Figure 20).

The 1987 brood Late Clackamas stock coho released in the Collawash River survived at a rate of 0.38 % (Figure 21).

None of the summer and winter steelhead were marked with coded-wire tags for evaluation.

Marion Forks Hatchery

Marion Forks Hatchery is located on the North Santiam River 10 miles east of Idana on Highway 22. Marion Forks Hatchery rears and releases spring chinook salmon, winter steelhead and cutthroat.

The 1985 to 1989 brood North Santiam spring chinook salmon stock released in the Santiam River and North Fork survived at an average rate of 1.20 % and contributed primarily to the Oregon freshwater sport and Columbia River gillnet fisheries and Alaska and British Columbia ocean fisheries (Figure 22).

The 1985 to 1987 brood North Santiam spring chinook salmon released in the Santiam River and South Fork survived at an average rate of 1.27 % and contributed primarily to the Oregon freshwater sport and Columbia River gillnet fisheries and Alaska and British Columbia ocean fisheries (Figure 23).

Clackamas Spring Chinook Released in Clackamas R

1985 - 1989 Brood Year

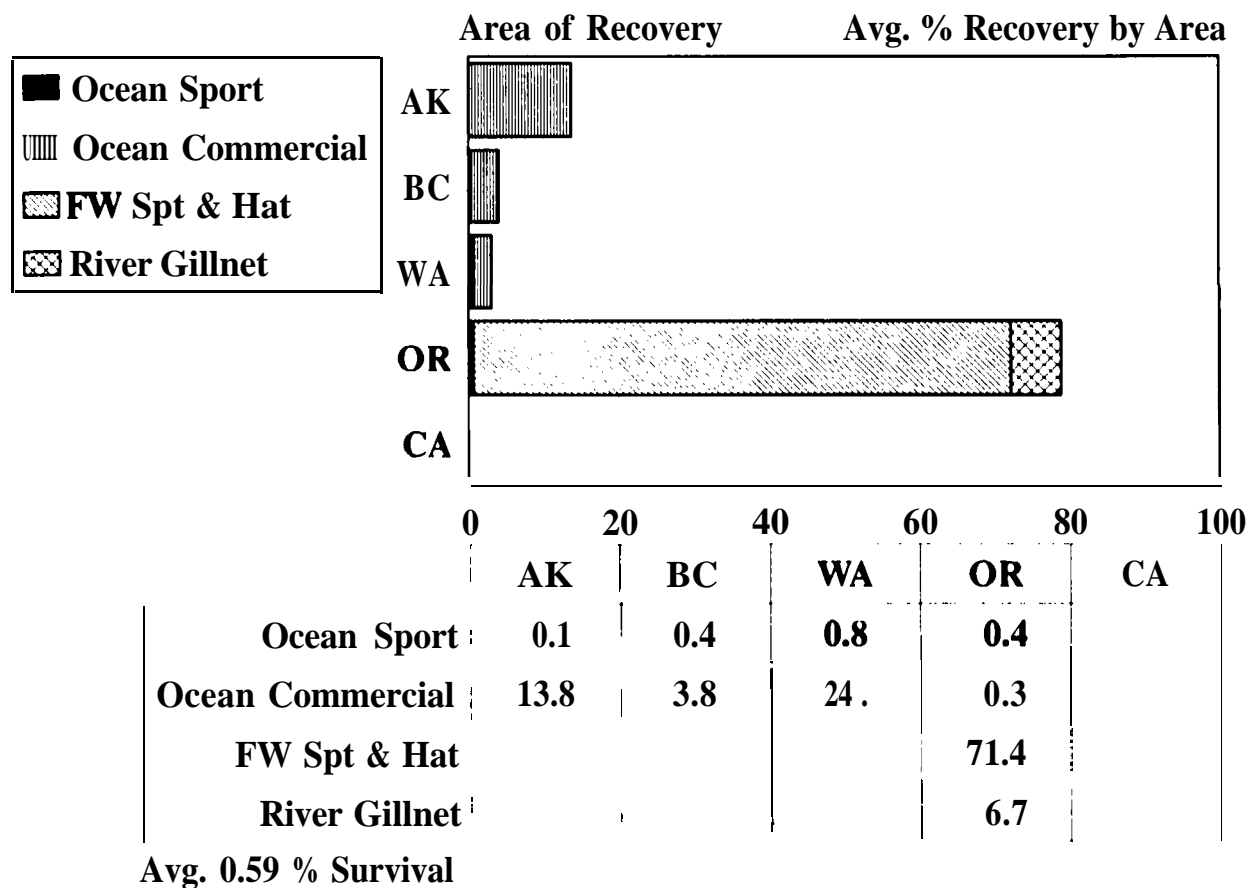
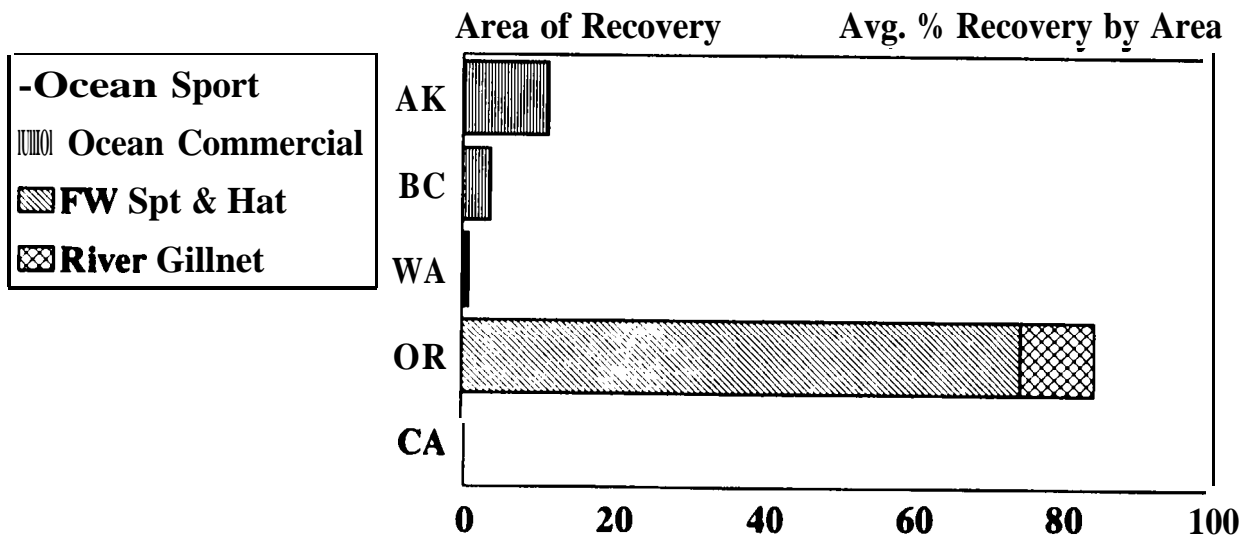


Figure 19.

Willamette Spring Chinook Released in Clackamas R

1986 - 1987 Brood Year



-Ocean Sport
Ocean Commercial
FW Spt & Hat
River Gillnet

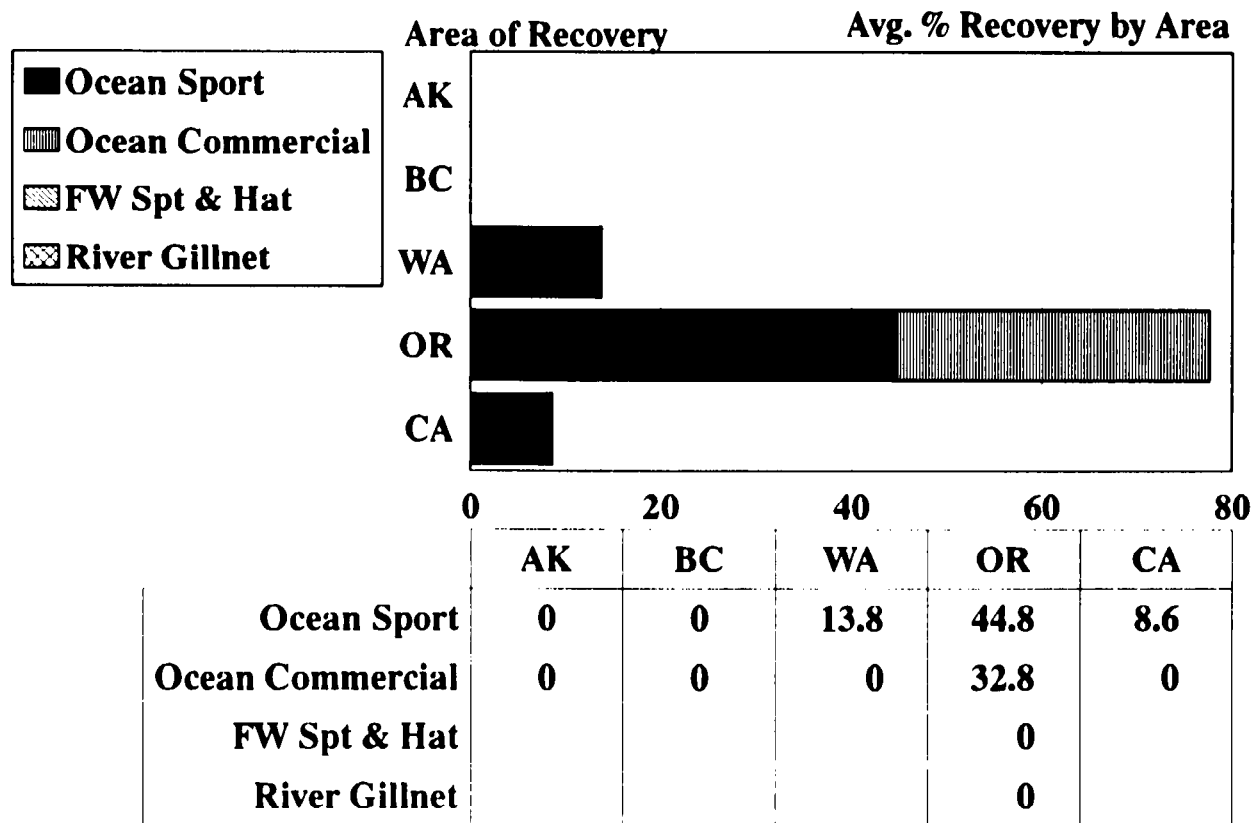
	AK	BC	WA	OR	CA
Ocean Sport	0.3		0.9		
Ocean Commercial	11	3.7			
FW Spt & Hat				74.5	
River Gillnet				9.8	

Avg. 1.65 % Survival

Figure 20.

Clackamas River Late Coho Stock Released in Collawash River

1987 Brood Year

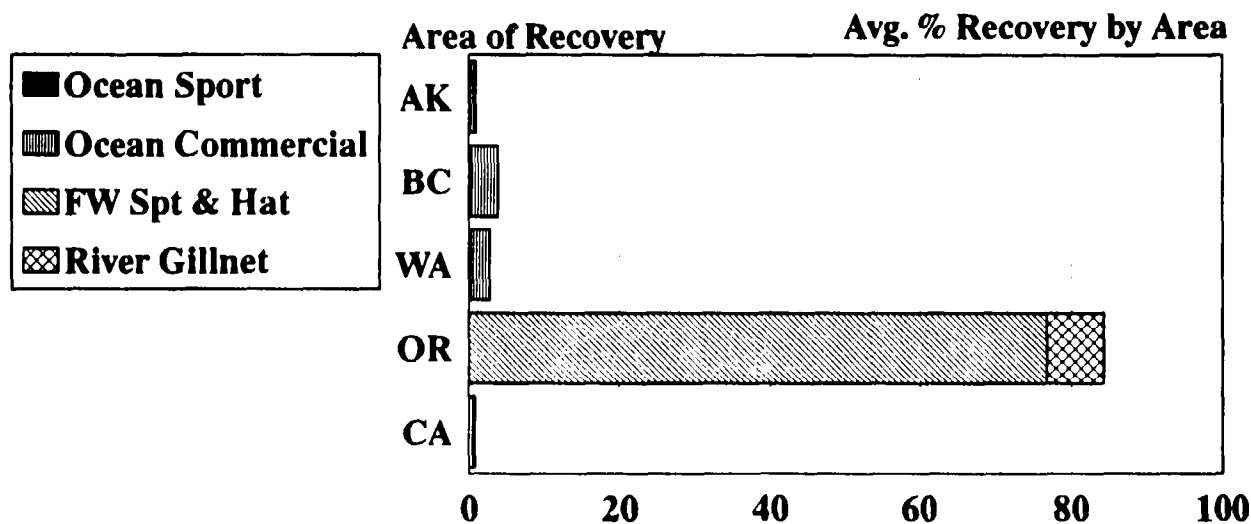


Avg. 0.38 % Survival

Figure 21.

Marion Forks (N. Santiam Stock) Spring Chinook Released in Santiam R. & N. Fork

1985 - 1989 Brood Year



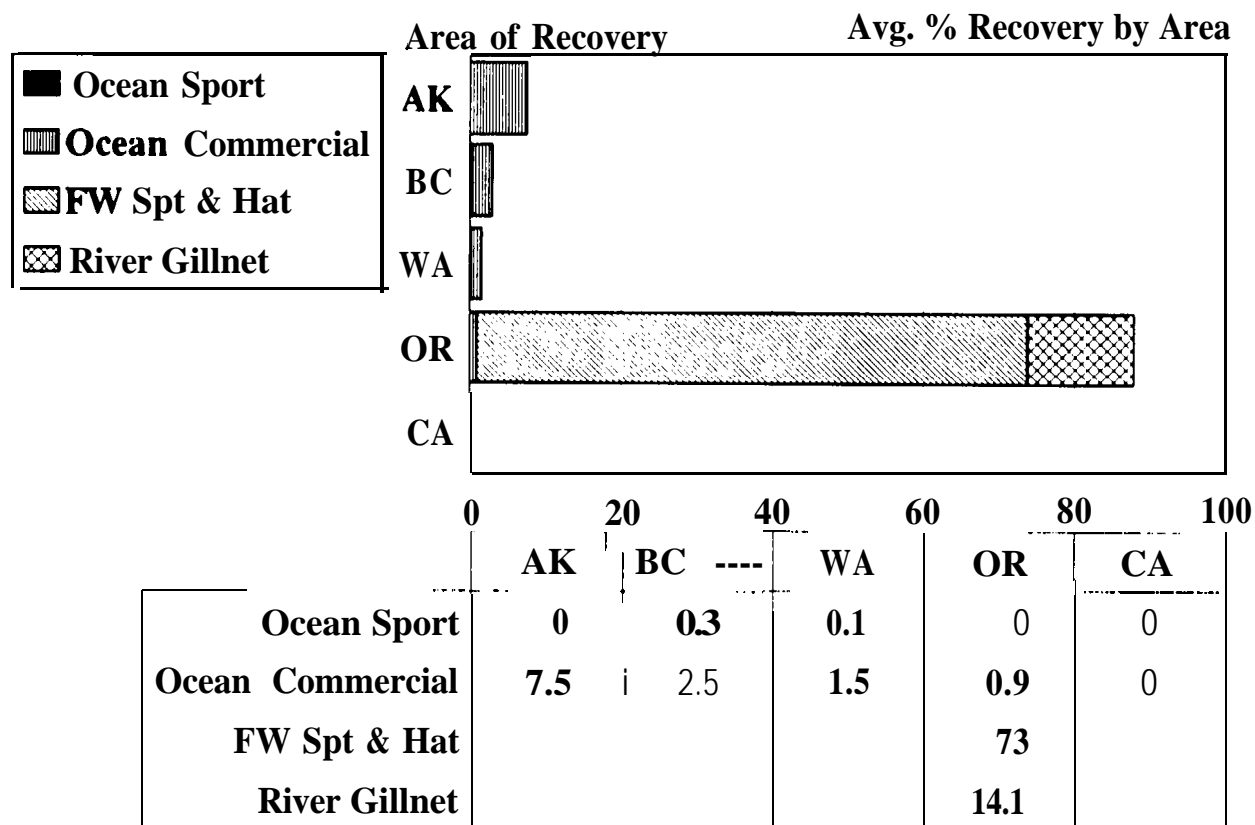
	AK	BC	WA	OR	CA
Ocean Sport	0.2	0.4	0.2	0	0
Ocean Commercial	0.8	3.5	2.6	0	0.8
FW Spt & Hat				76.8	
River Gillnet				7.6	

Avg. 1.20 % Survival

Figure 22.

Marion Forks (N. Santiam Stock) Spring Chinook Released in Santiam R., S. Fork

1985 - 1987 Brood Year



Avg. 1.27 % Survival

Figure 23.

The 1985 brood winter steelhead were tagged but none were recovered. All other winter steelhead and cutthroat trout released by the Marion Forks Hatchery were not coded-wire tagged for evaluation.

South Santiam Hatchery

The South Santiam Hatchery is located below Foster Dam on the South Santiam River near Sweet Home. South Santiam Hatchery rears and releases spring chinook salmon and summer steelhead trout.

The 1985 to 1989 brood years of spring chinook salmon reared at South Santiam Hatchery and released in the South Santiam River survived at a rate of 0.90 % and contributed primarily to the Alaska and British Columbia ocean commercial, Oregon freshwater sport and Columbia River gillnet fisheries (Figure 24).

The 1986 to 1987 brood years of South Santiam spring chinook salmon reared at South Santiam Hatchery and released in the Willamette River survived at a rate of 1.09 % and contributed primarily to the Alaska and British Columbia ocean commercial, Oregon freshwater sport and Columbia River gillnet fisheries (Figure 25).

The winter steelhead trout released by the South Santiam Hatchery were not coded-wire tagged to permit evaluation.

Stayton Rearing Pond

Stayton Pond, a refurbished gravel pit located south of Stayton is operated as a satellite of the South Santiam Hatchery. Tule fall chinook are reared and released from Stayton Pond.

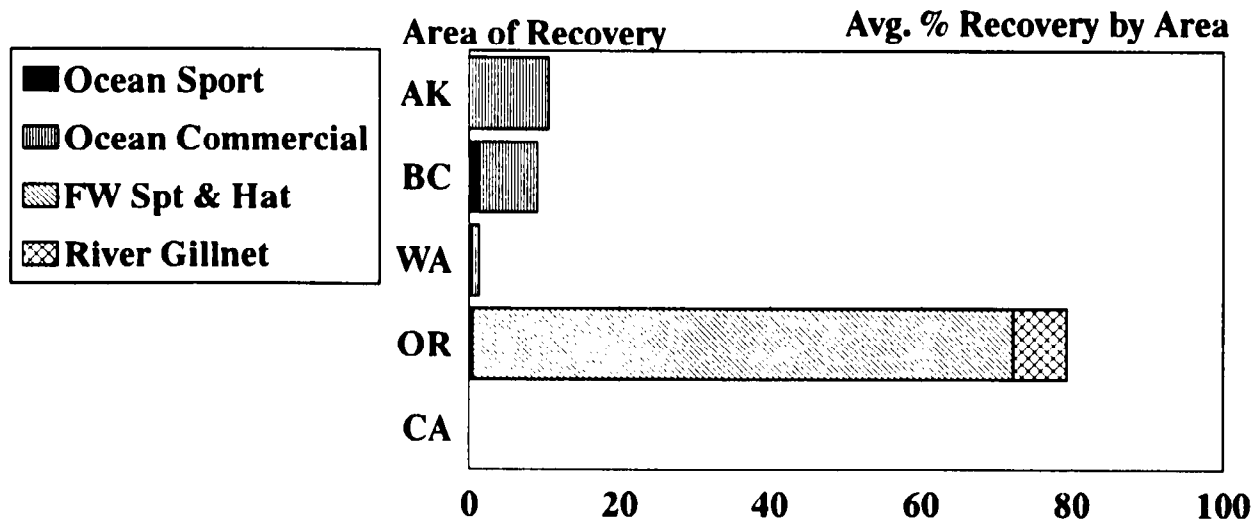
The 1985 to 1989 brood of tule fall chinook released from Stayton pond survived an average rate of 0.25 % and contributed primarily to the British Columbia, Washington and Oregon ocean sport and commercial fisheries and the Columbia River gillnet fishery (Figure 26).

Roaring River Hatchery

Roaring River Hatchery rears and releases winter steelhead and rainbow trout. None of these fish have been coded-wire tagged for evaluation.

S. Santiam (S. Santiam Stock) Spring Chinook Released in Santiam R., S. Fork

1985 - 1989 Brood Year



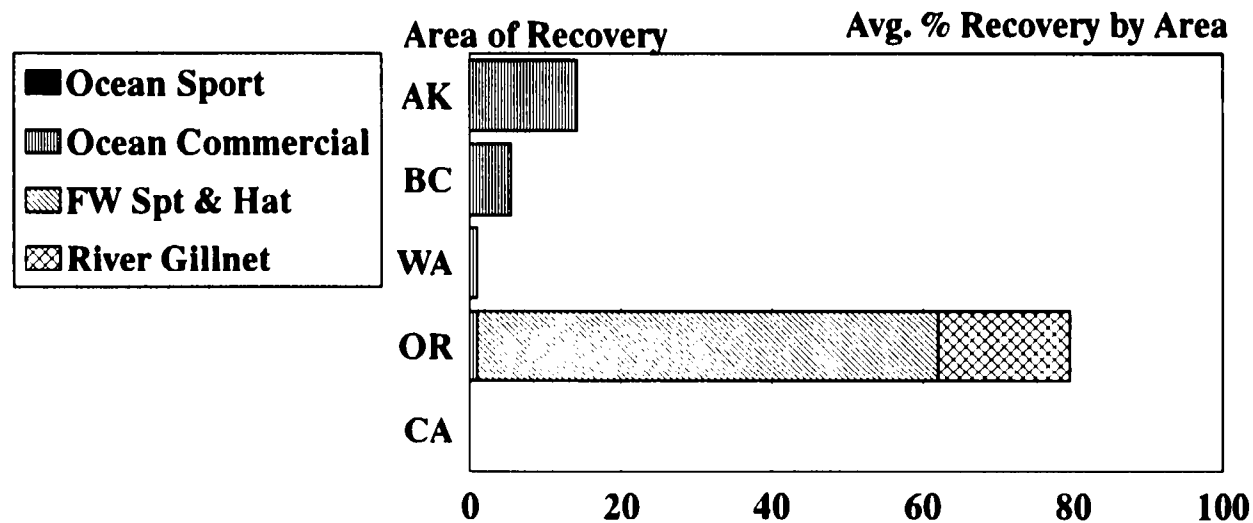
	AK	BC	WA	OR	CA
Ocean Sport	0	1.4	0.4	0.2	0
Ocean Commercial	10.6	7.7	0.9	0.3	0
FW Spt & Hat				71.7	
River Gillnet				7.1	

Avg. 0.90 % Survival

Figure 24.

S. Santiam Spring Chinook Released in Willamette River

1986 - 1987 Brood Year



	AK	BC	WA	OR	CA
Ocean Sport	0		0	0	0
Ocean Commercial	14.2	5.5	1	1	0
FW Spt & Hat				61	
River Gillnet				17.5	

Avg. 1.09 % Survival

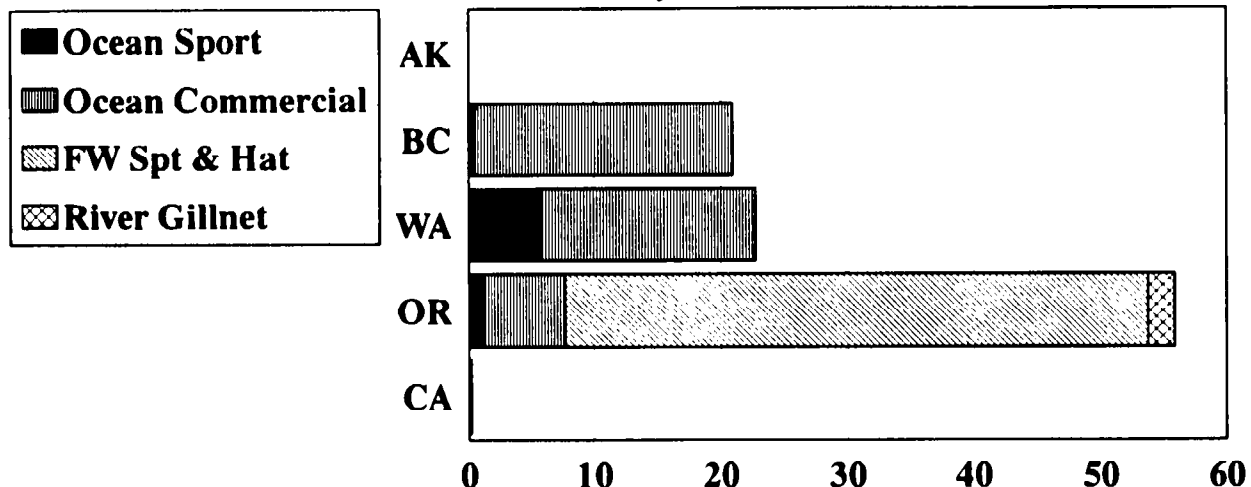
Figure 25.

Stayton Pond Tule Fall Chinook Released in Willamette R

1985 - 1989 Brood Year

Area of Recovery

Avg. % Recovery by Area



	AK	BC	WA	OR	CA
Ocean Sport		0.5	5.9	1.3	0.2
Ocean Commercial		20.5	16.9	6.4	0
FW Spt & Hat				46.1	
River Gillnet				2.1	

Avg. 0.25 % Survival

Figure 26.

McKenzie Hatchery

McKenzie Hatchery is located on the McKenzie River 18 miles east of Springfield. McKenzie Hatchery rears and releases spring chinook salmon and summer steelhead trout.

The 1985 to 1989 brood years of spring chinook salmon released in the McKenzie River survived at a rate of 0.93 % and contributed primarily to the Alaska and British Columbia ocean commercial, Oregon freshwater sport and Columbia River gillnet fisheries (Figure 27).

None of the summer steelhead released from McKenzie Hatchery have been coded-wire tagged for evaluation.

Leaburg Hatchery

Leaburg Hatchery is located on the McKenzie River off Highway 126, 16 miles east of Springfield. McKenzie Hatchery rears and releases summer steelhead and rainbow trout. None of these fish have been coded-wire tagged for evaluation.

Willamette Hatchery

Willamette Hatchery is located on the Willamette River 1 mile east of Oakridge off Highway 58. Willamette Hatchery rears and releases spring chinook salmon, summer and winter steelhead and rainbow trout.

The 1985 to 1989 brood years of spring chinook salmon reared at Willamette Hatchery and released in the middle fork of the Willamette River survived at a rate of 1.21% and contributed primarily to the Alaska and British Columbia ocean commercial, Oregon freshwater sport and Columbia River gillnet fisheries (Figure 28).

Sandy Hatchery

Sandy Hatchery is located on the Sandy River 1 mile northeast of Sandy off Highway 26. Sandy Hatchery rears and releases coho salmon, rainbow and brook trout.

The 1987 to 1991 brood years of coho released in the Sandy River survived at an average rate of 2.11 % and contributed primarily to the Washington and Oregon ocean sport and commercial fisheries and the Columbia River gillnet fishery (Figure 29).

The 1989 and 1991 brood years of Sandy stock coho reared at Trojan pond and released in the Columbia River survived at an average rate of 0.18 % and contributed primarily to the

McKenzie Spring Chinook Released in McKenzie R

1985 - 1989 Brood Year

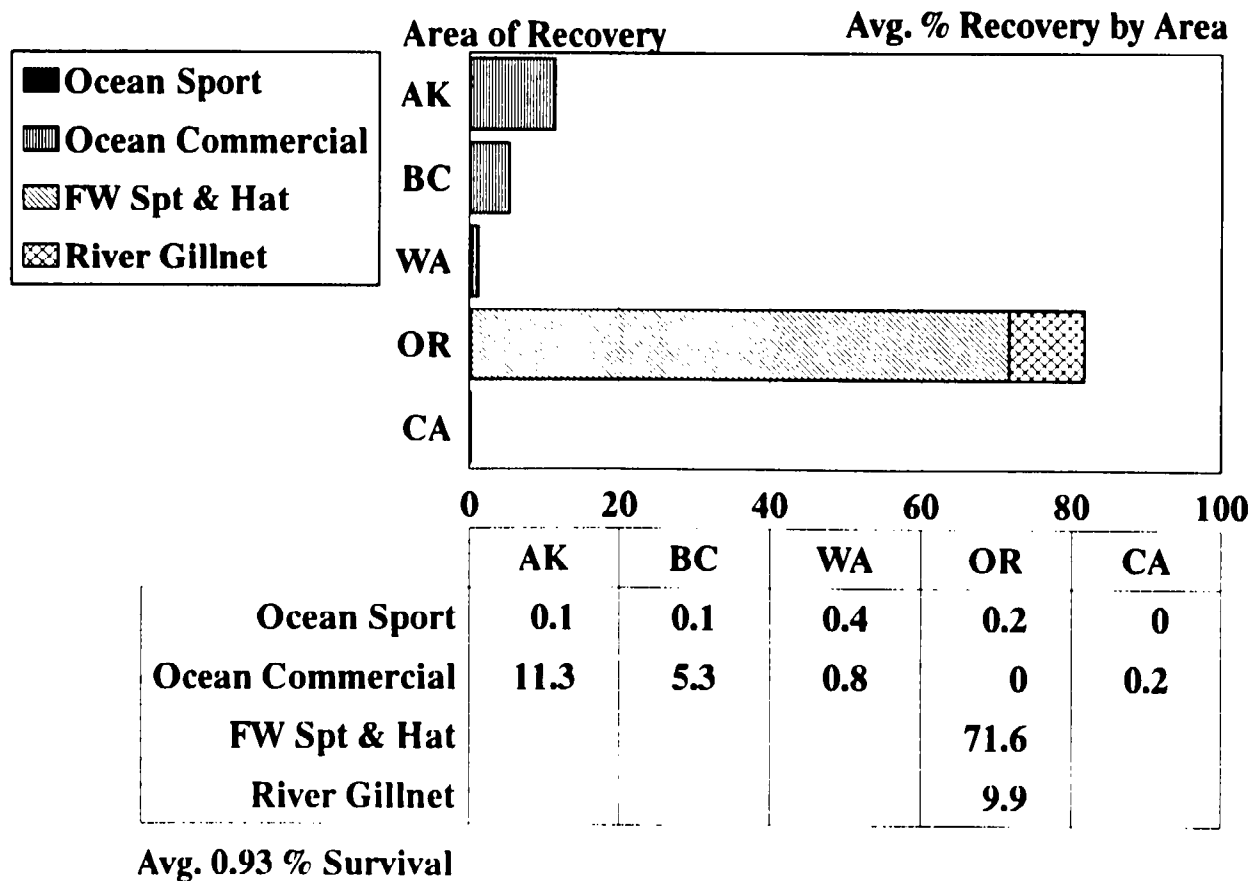
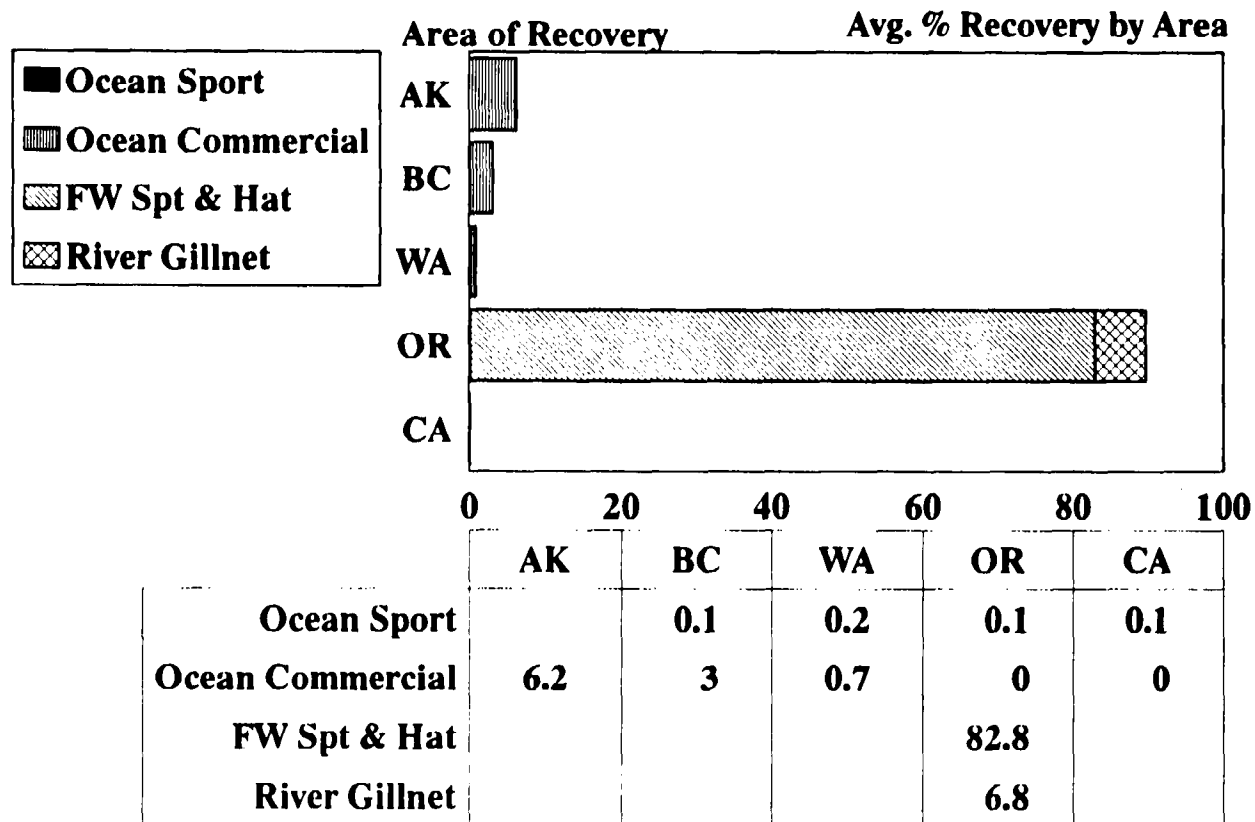


Figure 27.

Willamette Spring Chinook Released in Willamette R., M. Fork

1985 - 1989 Brood Year



Avg. 1.12 % Survival

Figure 28.

Sandy Coho Released in Sandy River

1987 - 1991 Brood Years

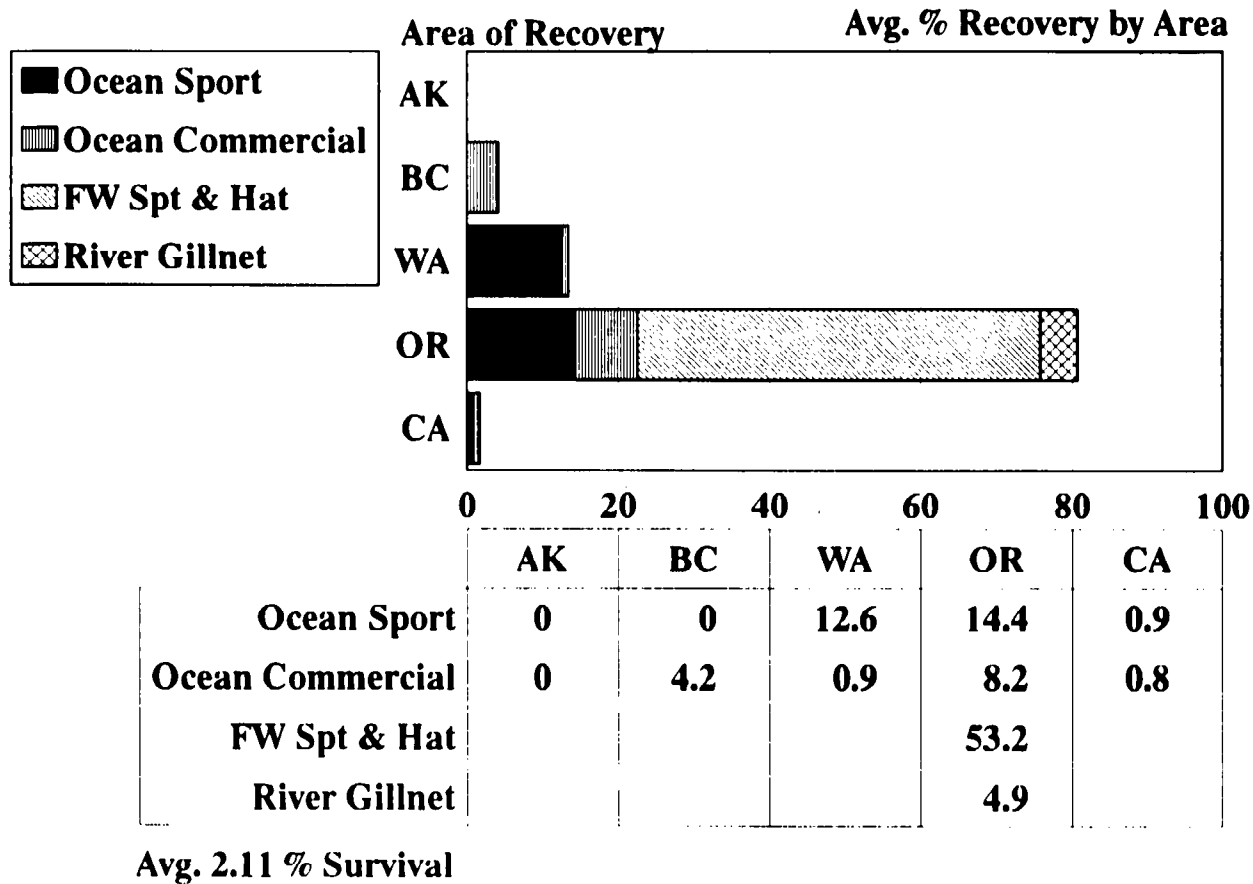
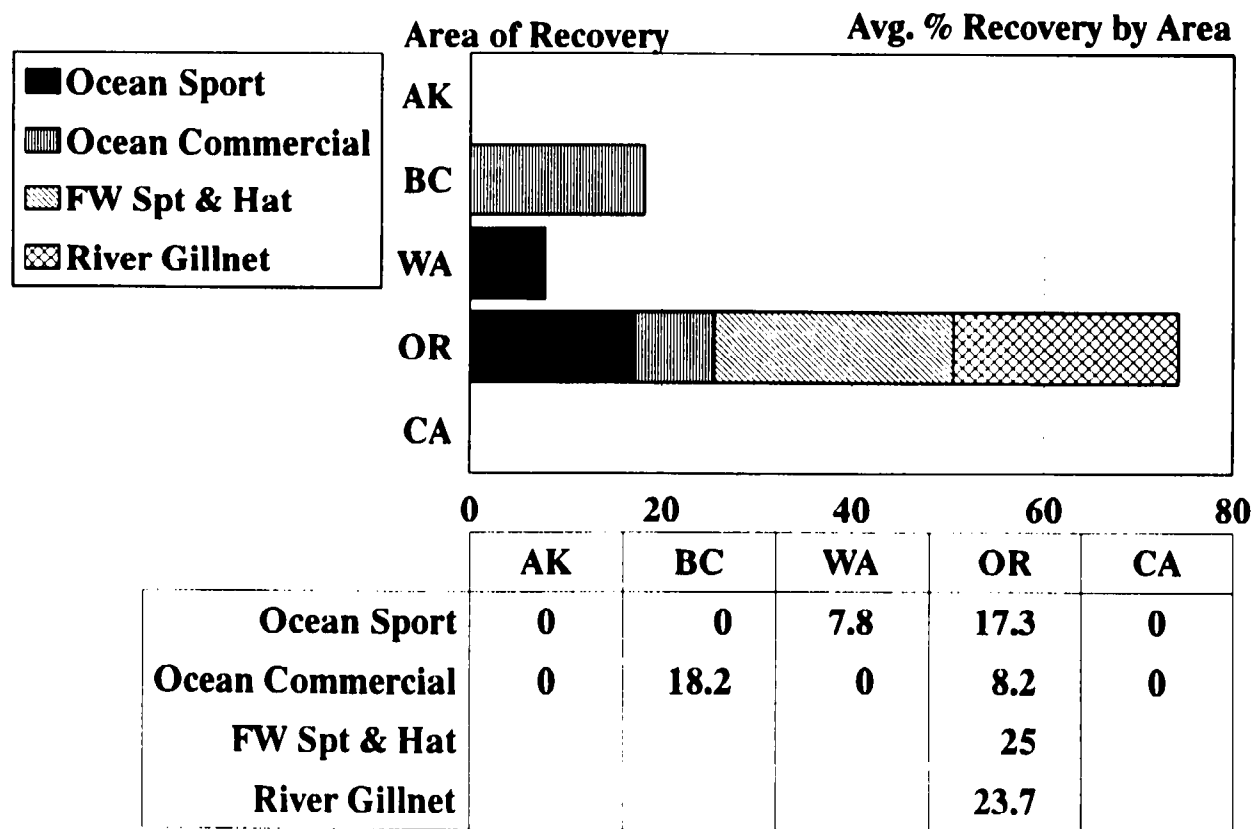


Figure 29.

Trojan Pond (Sandy River Stock) Coho Released in Columbia River

1989 & 1991 Brood Years



Avg. 0.18 % Survival

Figure 30.

Washington and Oregon ocean sport and commercial fisheries and the Columbia River gillnet fishery (Figure 30).

None of the rainbow or brook trout released by Sandy Hatchery were coded-wire tagged for evaluation.

Cascade Hatchery

The Cascade Hatchery is located off Highway 84 near Bonneville Dam. Cascade Hatchery rears and releases coho salmon that are presently all trucked and released in the Yakima and Umatilla River systems.

The 1987 to 1991 brood years of coho released in the Umatilla River survived at an average rate of 1.05 % and contributed primarily to the Washington, Oregon and California ocean sport and commercial fisheries and the Columbia River gillnet fishery (Figure 31).

The 1987 to 1991 brood years of coho released in the Yakima River survived at an average rate of 0.64 % and contributed primarily to the Washington, Oregon and California ocean sport and commercial fisheries and the Columbia River gillnet fishery (Figure 32).

Bonneville Hatchery

Bonneville Hatchery is located on the Columbia River below Bonneville Dam just off Highway 84. Bonneville Hatchery rears and releases tule and up-river bright fall chinook, spring chinook and coho salmon.

The 1986 to 1989 brood years of tule fall chinook survived at an average rate of 0.14 % and contributed primarily to the British Columbia, Washington and Oregon ocean sport and commercial fisheries and the Columbia River gillnet fishery (Figure 33).

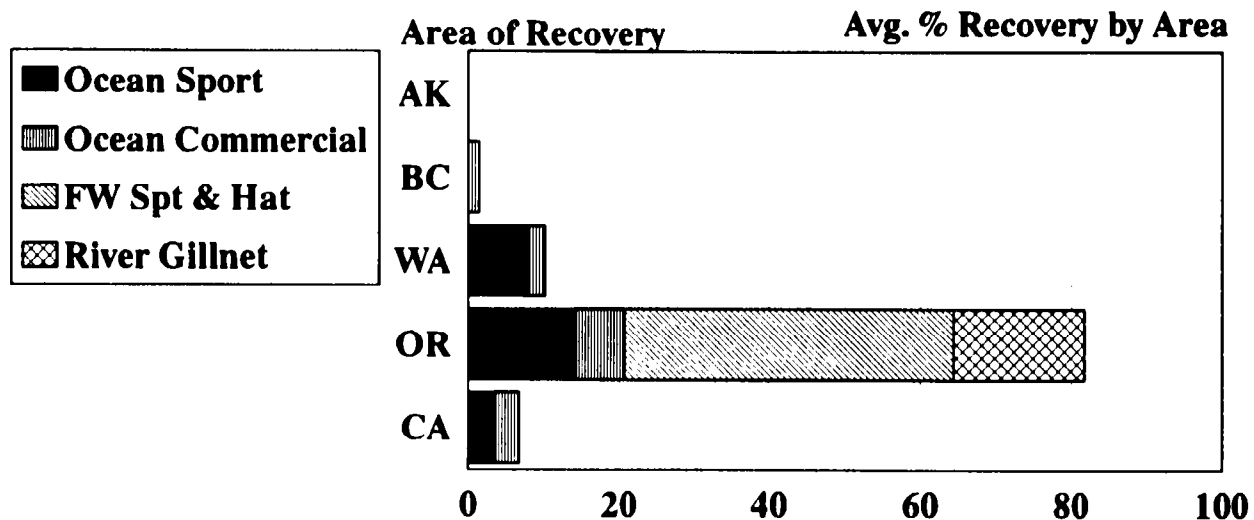
The 1985 to 1989 brood years of up-river bright fall chinook survived at an average rate of 0.91 % and contributed primarily to the Alaska and British Columbia ocean commercial fisheries and the Columbia River gillnet fishery (Figure 34).

The 1985 to 1987 brood years of up-river bright fall chinook released in the Umatilla River survived at an average rate of 1.88 % and contributed primarily to the Alaska and British Columbia ocean commercial fisheries and the Columbia River gillnet fishery (Figure 35).

The 1988 and 1989 brood years of up-river bright fall chinook released in the Mid-Columbia River survived at an average rate of 0.24% and contributed primarily to the British Columbia ocean

Cascade Coho Released in Umatilla R.

1987 - 1991 Brood Year



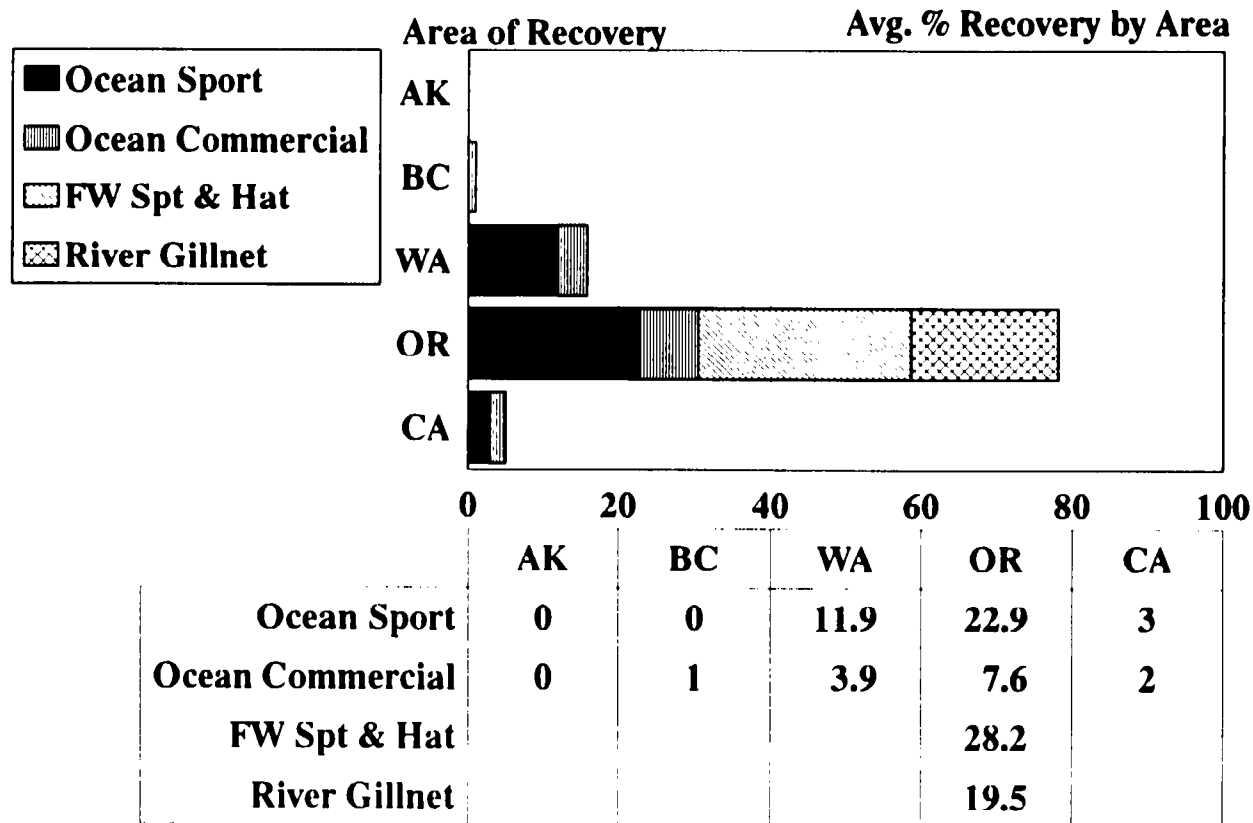
	AK	BC	WA	OR	CA
Ocean Sport	0	0	8.1	14.2	3.6
Ocean Commercial	0	1.4	2.1	6.5	3.1
FW Spt & Hat				43.7	
River Gillnet				17.4	

Avg. 1.05 % Survival

Figure 31.

Cascade Coho Released in Yakima R.

1987 - 1991 Brood Year

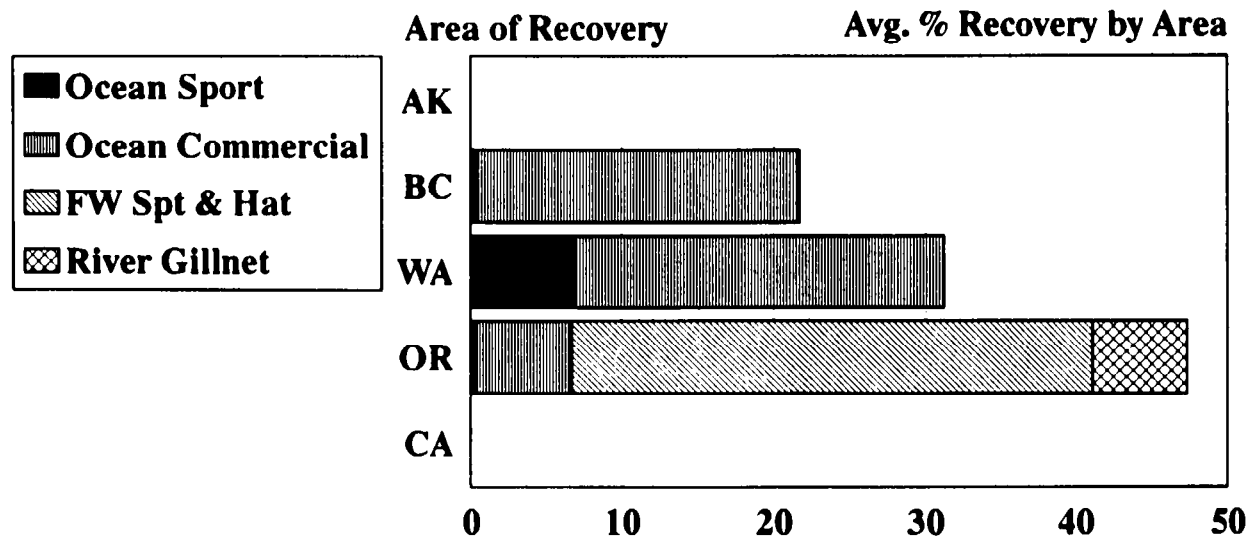


Avg. 0.64 % Survival

Figure 32.

Bonneville Tule Fall Chinook

1986 - 1989 Brood Year



	AK	BC	WA	OR	CA
Ocean Sport		0.5	7	0.4	0
Ocean Commercial		21.2	24.2	6.3	0
FW Spt & Hat				34.4	
River Gillnet				6.2	

Avg. 0.14 % Survival

Figure 33.

Bonneville URB Fall Chinook Released in Tanner Creek

1985 - 1989 Brood Year

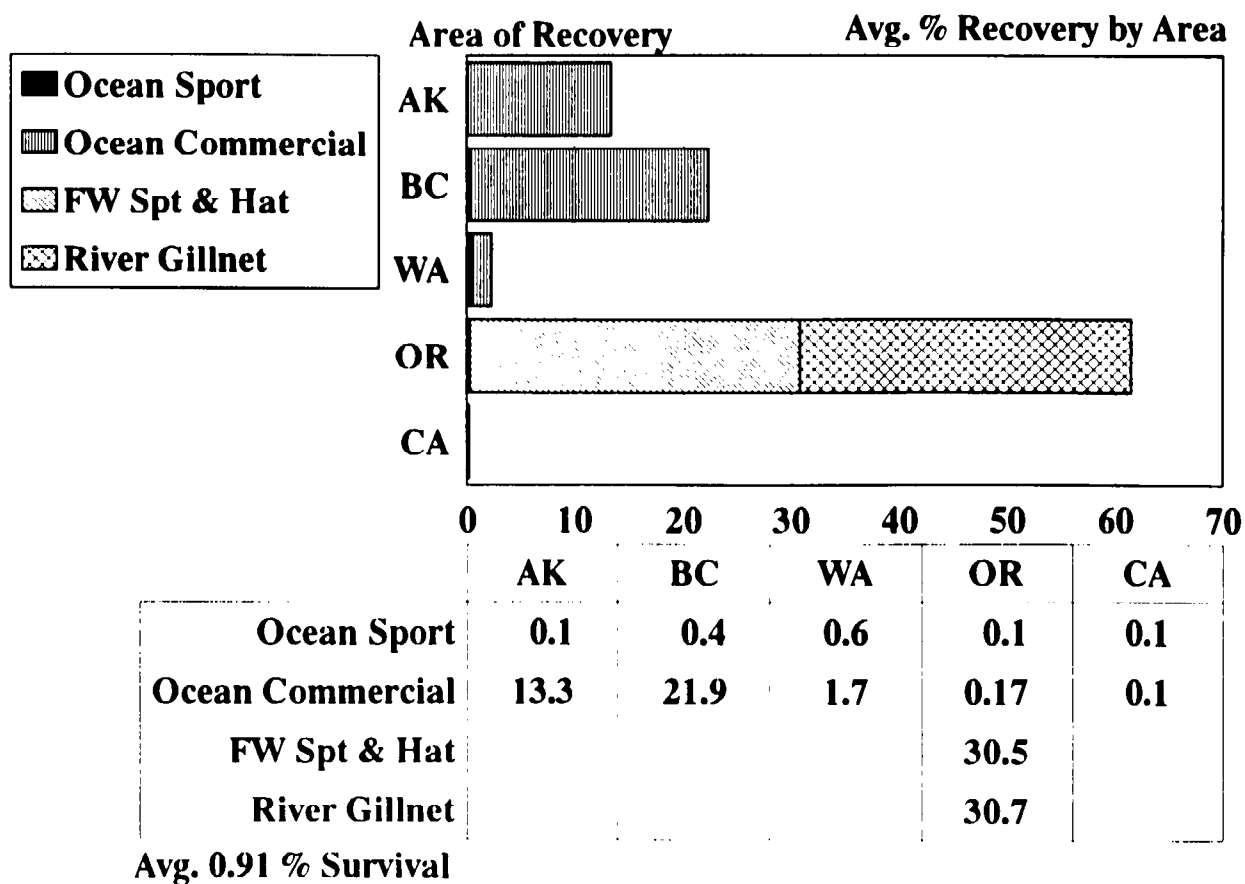
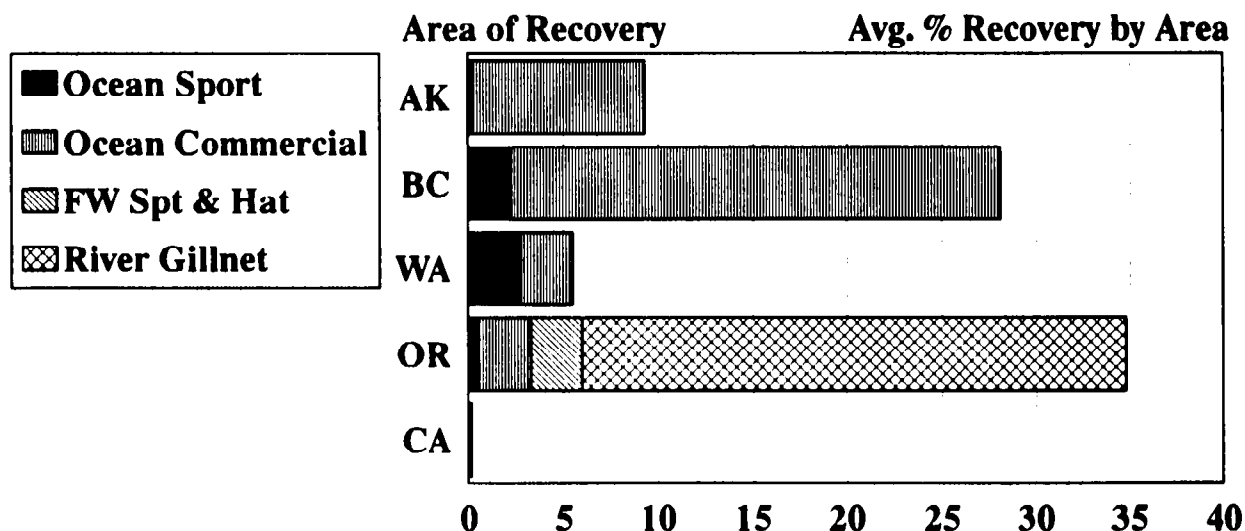


Figure 34.

Bonneville URB Fall Chinook Released in Umatilla R

1985 - 1987 Brood Year



	AK	BC	WA	OR	CA
Ocean Sport	0.3	2.3	2.8	0.6	0.1
Ocean Commercial	9	25.8	2.7	2.7	0.1
FW Spt & Hat				2.7	
River Gillnet				28.8	

Avg. 1.88 % Survival

Figure 35.

commercial fisheries and the Columbia River freshwater and gillnet fishery (Figure 36).

The 1986 brood of summer chinook released in the Columbia River at Bonneville Hatchery survived at an average rate of 0.22 % and contributed primarily to the Alaska and British Columbia ocean commercial fisheries and the Columbia River gillnet fishery (Figure 37).

The 1986 to 1989 brood of Carson spring chinook chinook released in the Umatilla River survived at an average rate of 0.36 % and contributed primarily to the Columbia River freshwater sport and gillnet fishery (Figure 38).

The 1987 to 1991 brood years of coho released from Bonneville Hatchery survived at an average rate of 2.00 % and contributed primarily to the Washington, Oregon and California ocean sport and commercial fisheries and the Columbia River gillnet fishery (Figure 39).

Oxbow Hatchery

Oxbow Hatchery is located on the Columbia River 2 miles east of Cascade Locks off Highway 84. Oxbow Hatchery rears coho and spring chinook salmon. Part of the coho reared in the Herman Creek ponds are trucked to Bonneville Hatchery for extended rearing and acclimation prior to release at Bonneville. The remainder of the coho started at Oxbow are stocked in Wahkeena Pond for extended rearing and released from that location. Wahkeena Pond is operated as a satellite of Oxbow Hatchery.

The 1986 to 1989 brood Carson stock spring chinook reared at Oxbow/Bonneville Hatchery and released in the West Fork of Hood River survived at a rate of 0.16 % and contributed primarily to the Columbia freshwater sport and Columbia River gillnet fishery (Figure 40).

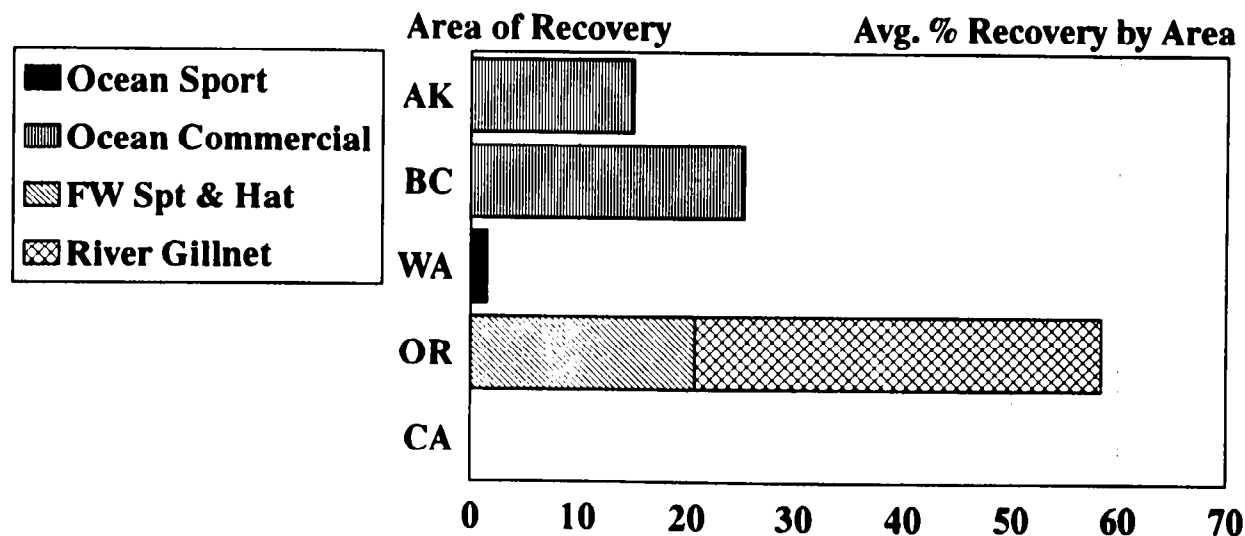
Wahkeena Pond

Wahkeena Pond is a natural lake rearing location near Rooster Rock State Park off Highway 84. Coho stocked in Wahkeena Pond are fed daily by the crew from Oxbow Hatchery.

The 1987 to 1991 brood years of coho reared in Wahkeena Pond survived at an average rate of 1.48 % and contributed primarily to the Washington, Oregon and California ocean sport and commercial fisheries and the Columbia River gillnet fishery (Figure 41).

Bonneville URB Fall Chinook Released in Mid-Columbia RR

1988 - 1989 Brood Year



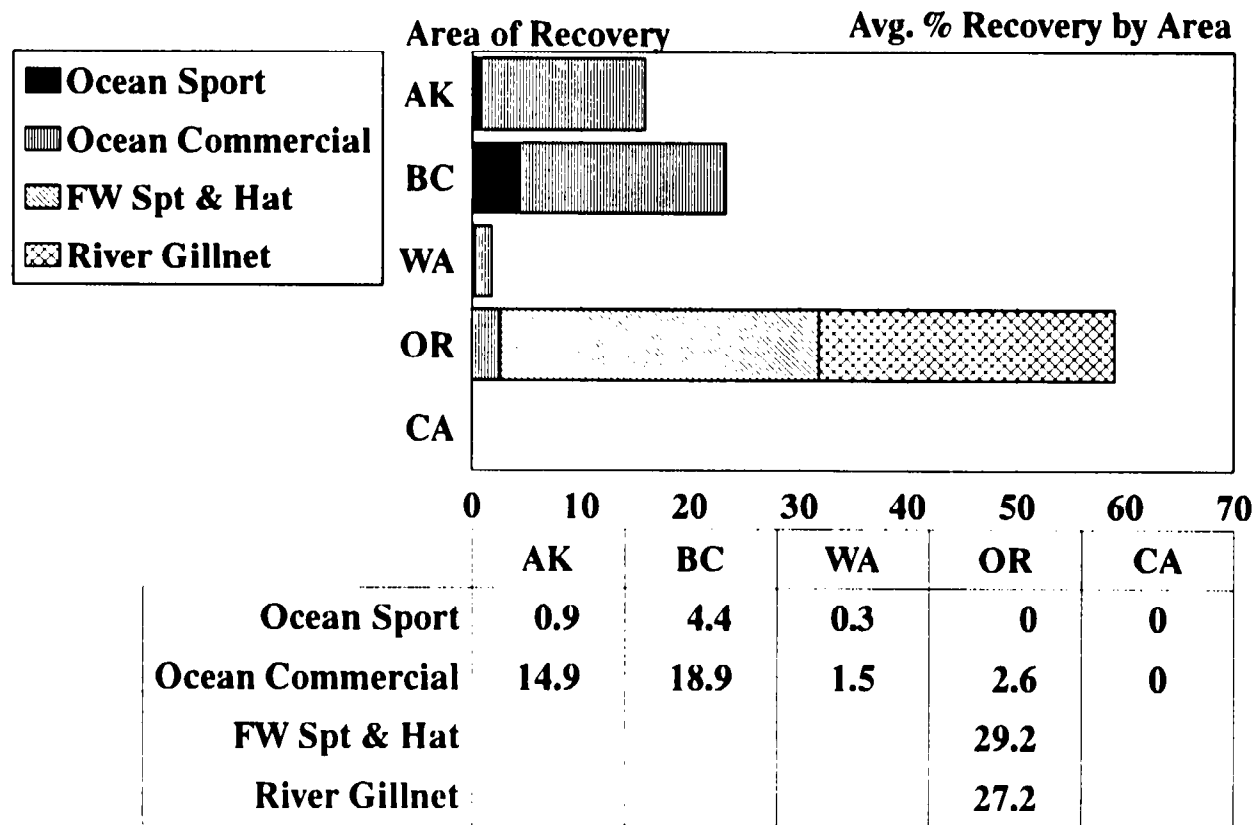
	AK	BC	WA	OR	CA
Ocean Sport	0	0	1.5	0	0
Ocean Commercial	15	25.3	0	0	0
FW Spt & Hat				20.7	
River Gillnet				37.7	

Avg. 0.24 % Survival

Figure 36.

Bonneville URB Summer Chinook Released in Tanner Creek

1986 Brood Year



Avg. 0.22 % Survival

Figure 37.

Carson/Lookingglass Spring Chinook (Bonneville Hat) Released in Umatilla R

1986 - 1989 Brood Year

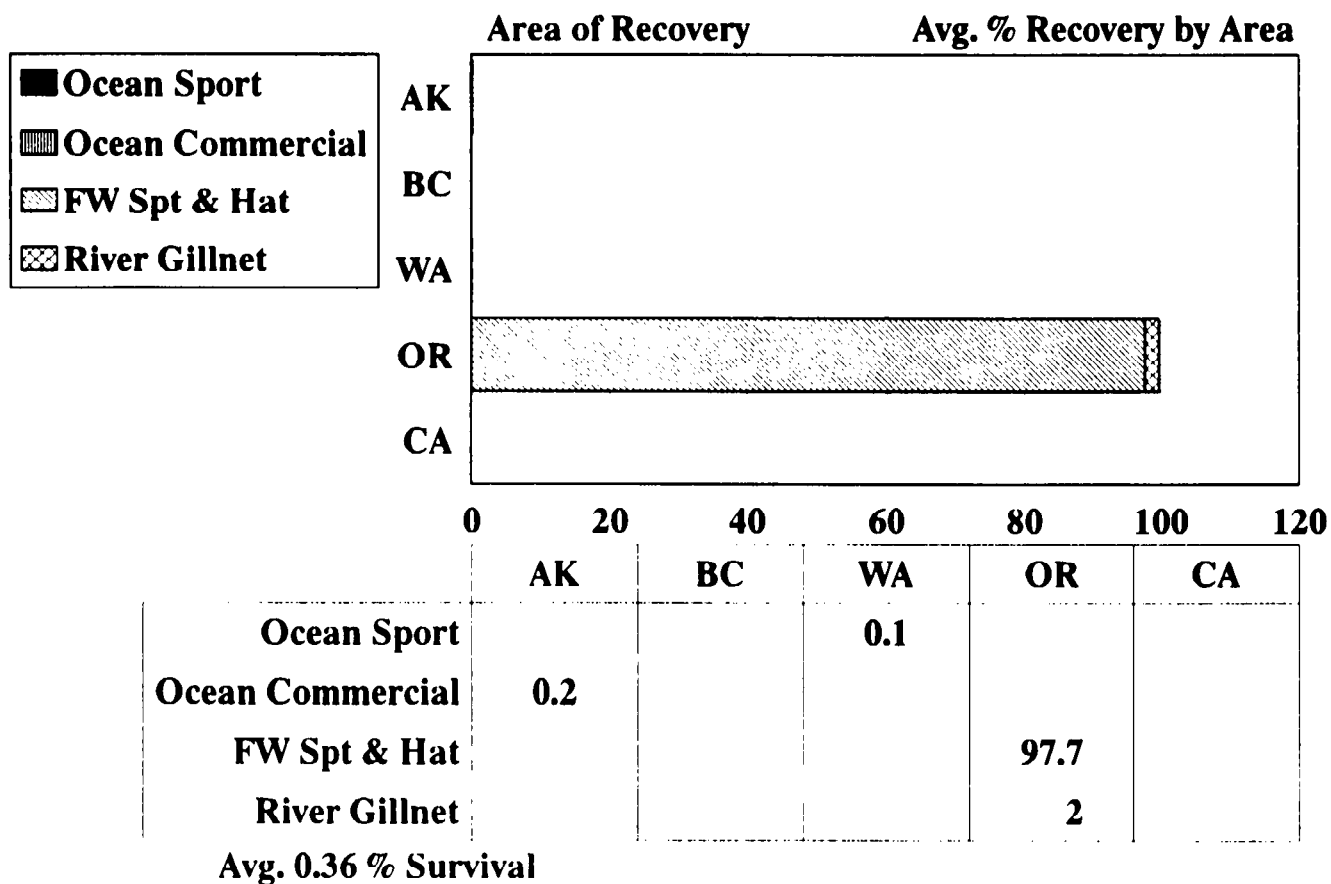


Figure 38.

Bonneville Coho Released in Tanner Creek

1987 - 1991 Brood Year

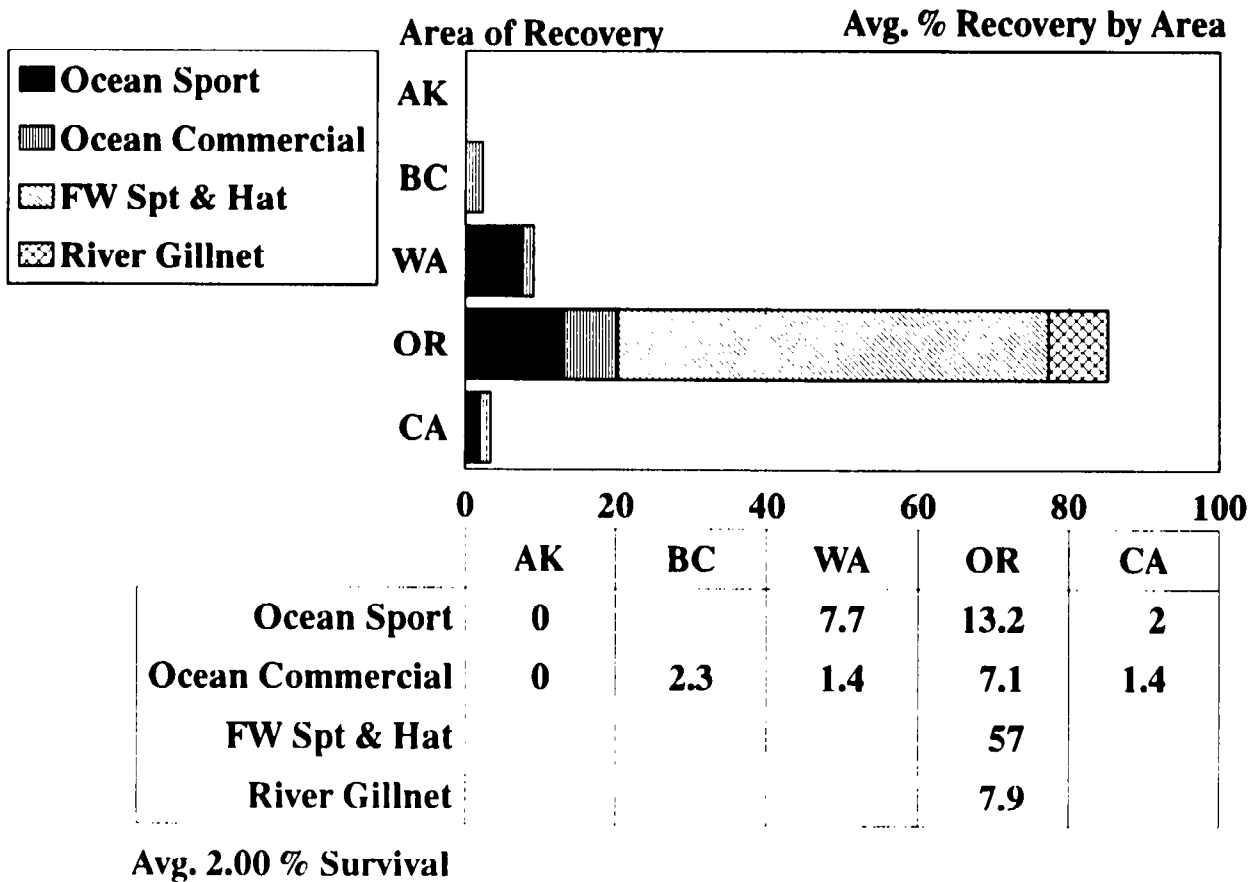


Figure 39.

Carson/Lookingglass Spring Chinook (Bonneville Hat) Released in West Fork Hood R.

1986 - 1989 Brood Year

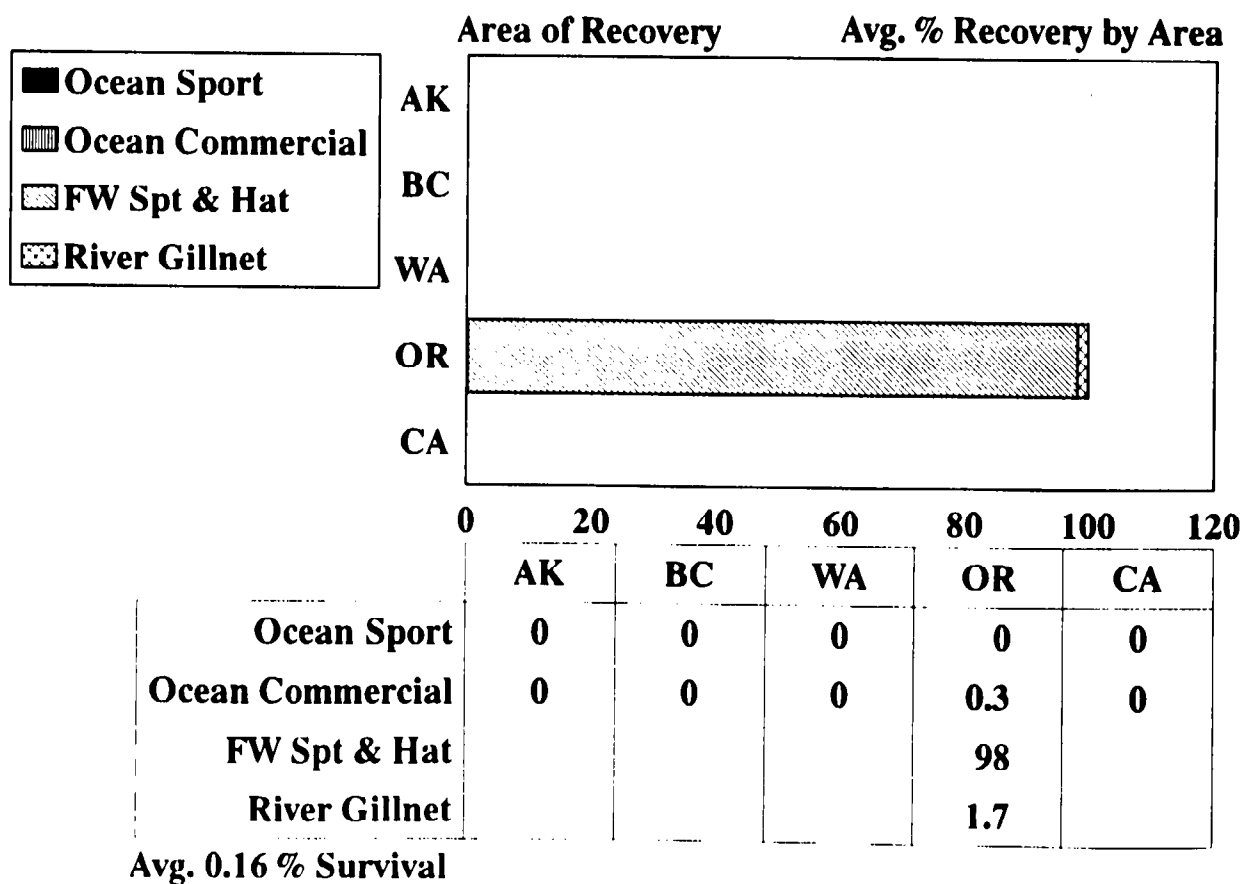
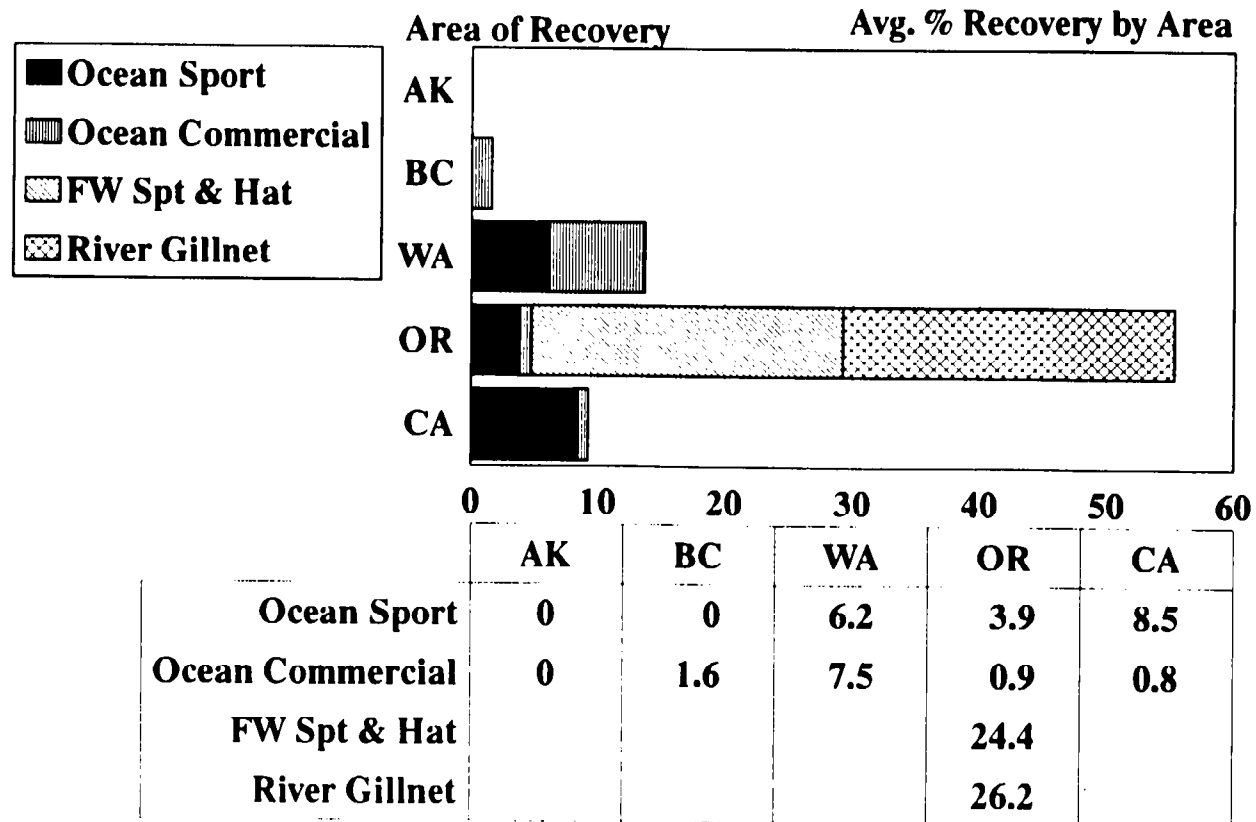


Figure 40.

Wahkeena Pond Coho Released in Columbia River

1987 - 1991 Brood Year



Avg. 1.48 % Survival

Figure 41.

Round Butte Hatchery

Round Butte Hatchery is located at the base of Round Butte Dam on the Deschutes River east of Madras. Round Butte Hatchery rears and releases spring chinook, summer steelhead and brown trout.

The 1985 to 1989 brood years of Deschutes spring chinook reared at Round Butte hatchery and released in the Deschutes River survived at an average rate of 1.49 % and contributed primarily to the freshwater sport fishery in the Columbia and Deschutes Rivers (Figure 42).

The summer steelhead and brown trout released from Round Butte Hatchery have not been coded-wire tagged for evaluation.

Oak Springs Hatchery

Oak Springs Hatchery is located on the Deschutes River 3 miles north of Maupin. Oak Springs Hatchery rears and releases summer and winter steelhead and rainbow trout.

The 1987 to 1990 brood Umatilla stock summer steelhead reared at Oaks Springs and released in the Umatilla River survived at an average rate of 0.60 % and contributed primarily to the Columbia River sport and gillnet fisheries (Figure 43).

Wizard Falls Hatchery

Wizard Falls Hatchery is located on the Metrolis River 2 miles north of Camp Sherman off Highway 20. Wizard Falls Hatchery rears and releases Atlantic and kokanee salmon, brown, brook and rainbow trout. None of these fish have been coded-wire tagged for evaluation.

Pall River Hatchery

Fall River Hatchery is located on Fall River, a tributary of the Deschutes River south east of Bend. Fall River Hatchery rears and releases cutthroat, brook and rainbow trout. None of these fish have been coded-wire tagged for evaluation.

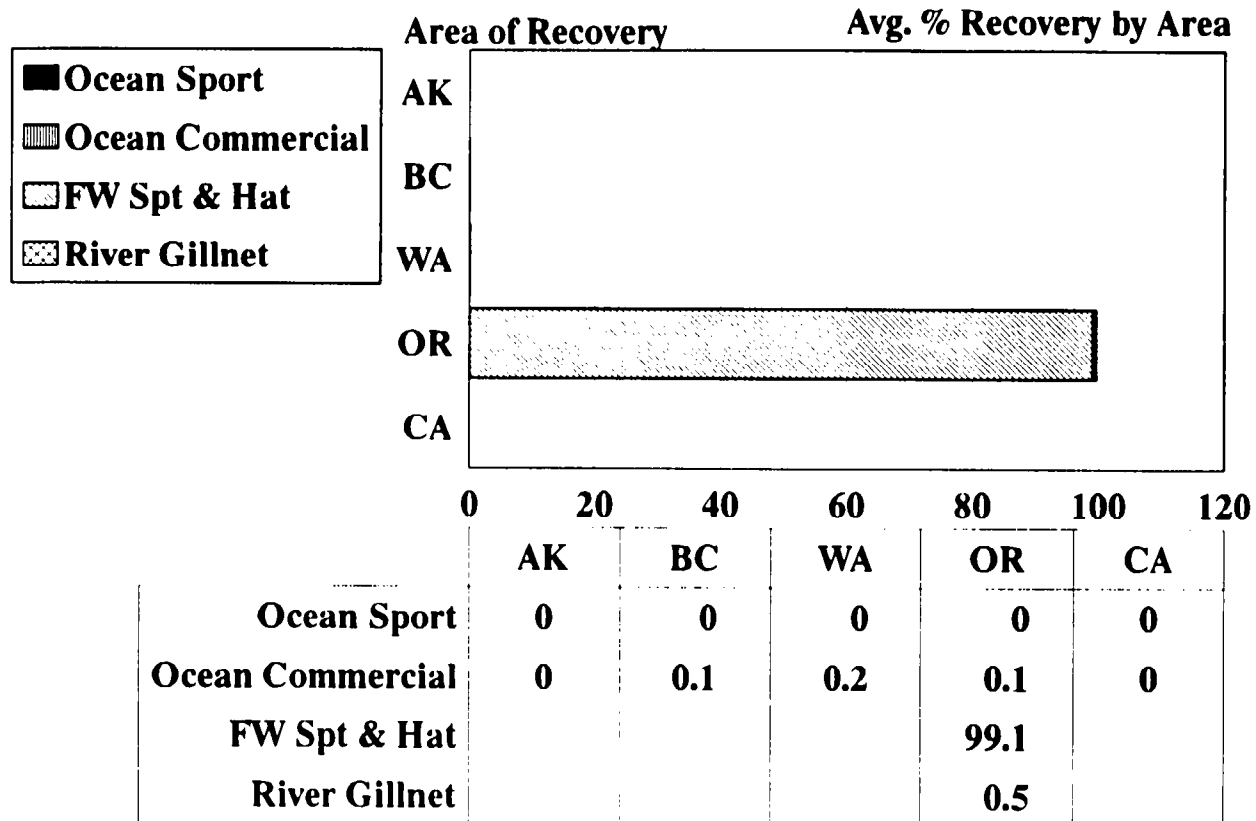
Irrigon Hatchery

Irrigon Hatchery is located on the Columbia River off Highway 730 near Irrigon. Irrigon rears and releases spring and fall chinook salmon, summer steelhead and rainbow trout.

The 1985 to 1989 brood-up river bright fall chinook reared at Irrigon hatchery and released in the Umatilla River survived at an average rate of 0.33 % and contributed primarily to the Alaska

Round Butte (Deschutes Stock) Spring Chinook Released in Deschutes R.

1985 - 1989 Brood Year

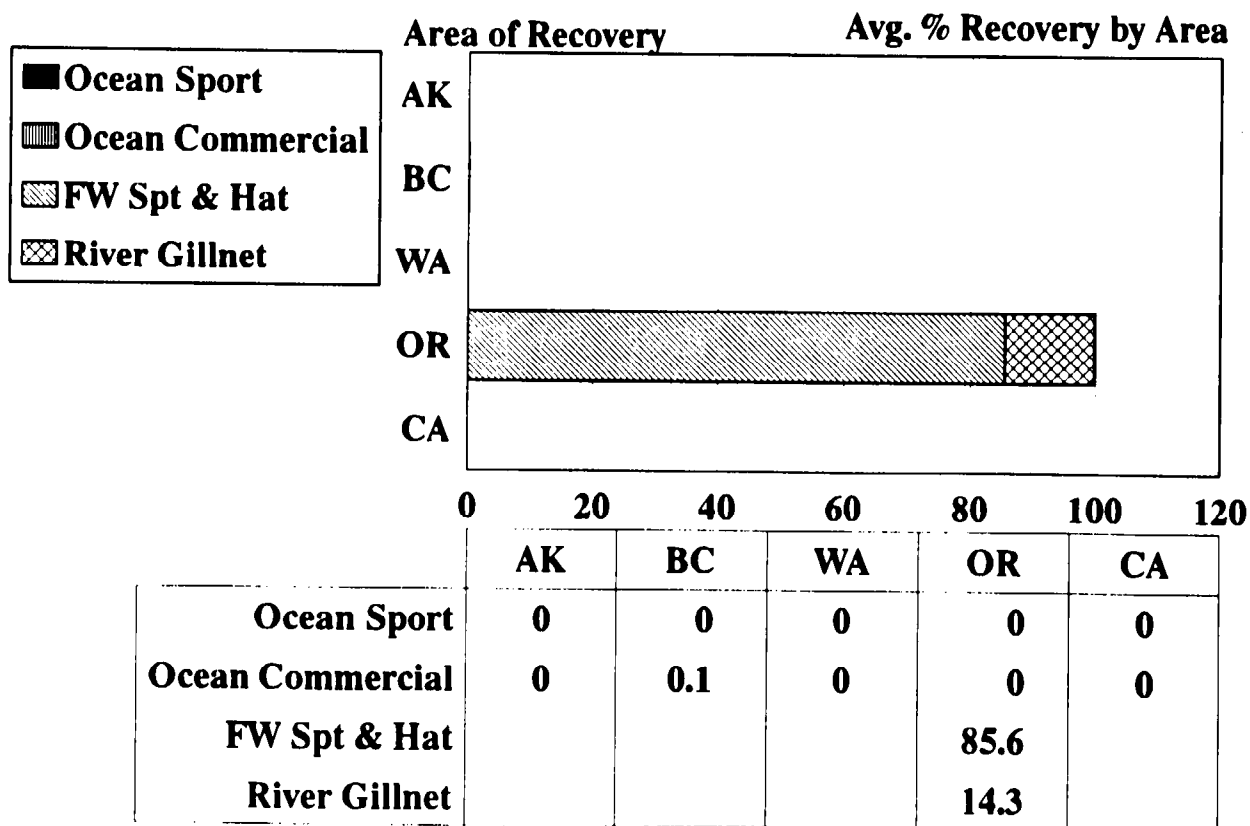


Avg. 1.49 % Survival

Figure 42.

Oak Springs (Umatilla Stock) Summer Steelhead Released in Spring Creek (Umatilla River)

1987 - 1990 Brood Year



Avg. 0.60% Survival

Figure 43.

and British Columbia ocean commercial fisheries and the Columbia River freshwater sport and gillnet fisheries (Figure 44).

The 1986 to 1988 brood Rapid River stock spring chinook reared at Irrigon hatchery and released in the Lookingglass Creek survived at an average rate of >0.01 %.(Figure 45).

The 1986 to 1990 brood Imnaha stock summer steelhead reared at Irrigon hatchery and released in Little Sheep Creek survived at a rate of 0.60 % and contributed primarily to the Columbia River freshwater sport and gillnet fisheries (Figure 46).

Umatilla Hatchery

Umatilla Hatchery, constructed in 1990 is located on the Columbia River adjacent to the Irrigon Hatchery. Umatilla Hatchery rears Columbia up-river bright fall chinook salmon and summer steelhead trout. Representative groups of these fish have been coded-wire tagged but no completed recovery data is available at the present time.

Lookingglass Hatchery

Lookingglass Hatchery is located on Lookingglass Creek, a tributary to the Grande Ronde River north of Elgin. Lookingglass Hatchery rears and releases spring chinook salmon.

The 1985 to 1989 brood Rapid River stock spring chinook reared a Lookingglass hatchery and released in Lookingglass Creek survived at an average rate of 0.13 % and contributed primarily to the freshwater sport and Columbia river gillnet fisheries (Figure 47).

The 1985 to 1986 brood Lookingglass stock spring chinook released in Lookingglass Creek survived at an average rate of 0.03 % and contributed to the freshwater sport and Columbia River gillnet fisheries (Figure 48)

The 1985 to 1989 brood Imnaha stock spring chinook released in the Imnaha river survived at an average rate of 0.20 % and contributed to the freshwater sport and Columbia River gillnet fisheries (Figure 49).

The 1985 Carson stock spring chinook reared at Lookingglass hatchery and released in the Big Canyon Creek survived at an average rate of 0.10 % and contributed primarily to the Columbia river freshwater sport and gillnet fisheries (Figure 50).

Umatilla URB Fall Chinook (Irrigon Hat)

Released in Umatilla R

1985 - 1989 Brood Year

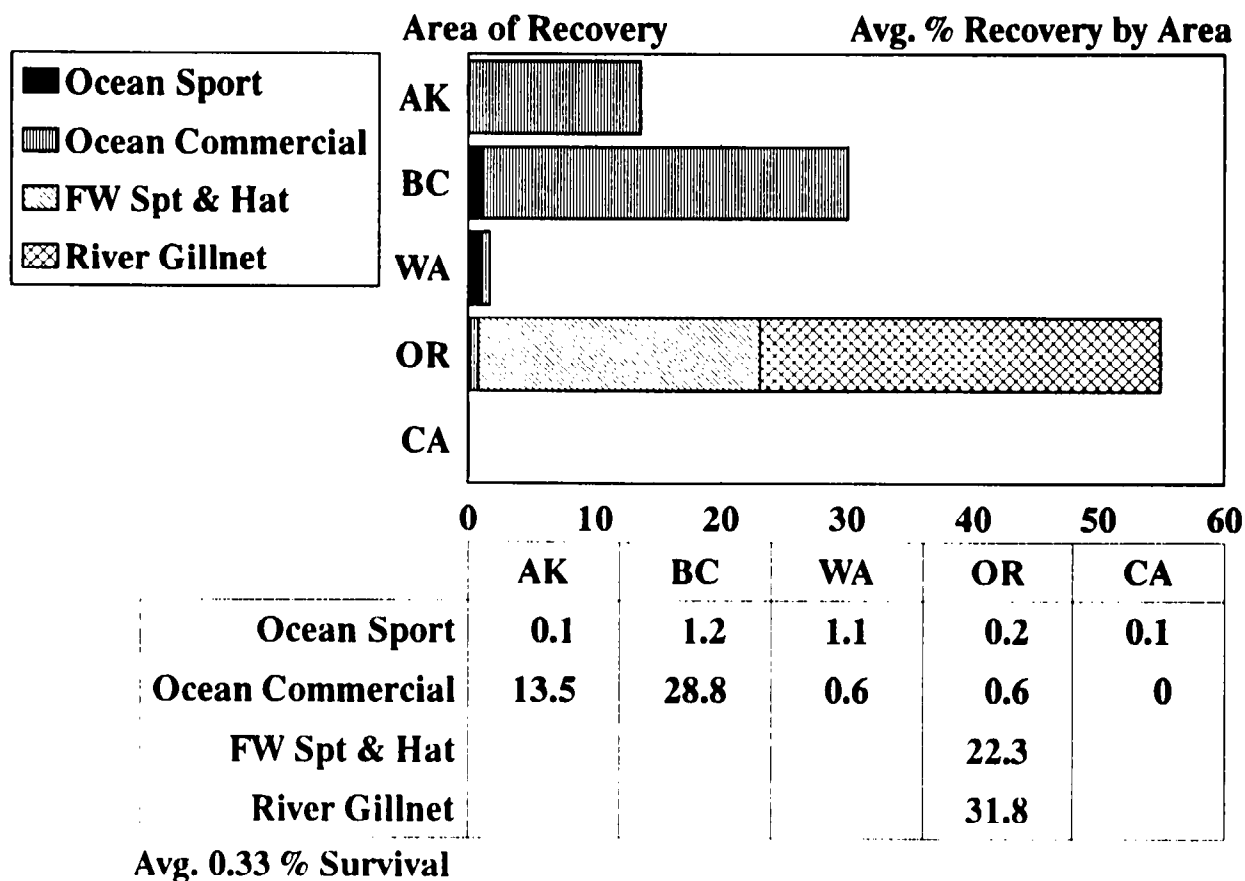
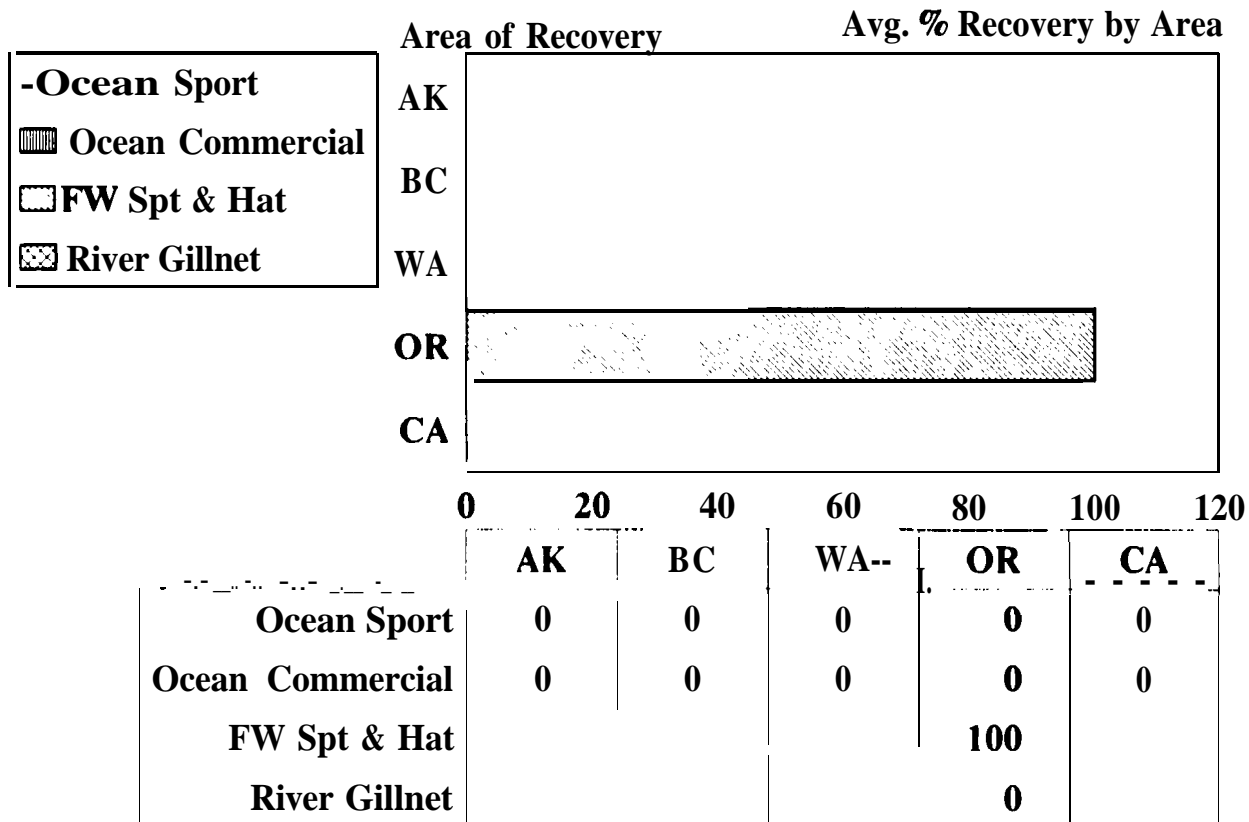


Figure 44.

Irrigon Hat. (Rapid R. Stock) Spring Chinook Released in Lookingglass Cr.

1986 - 1988 Brood Year

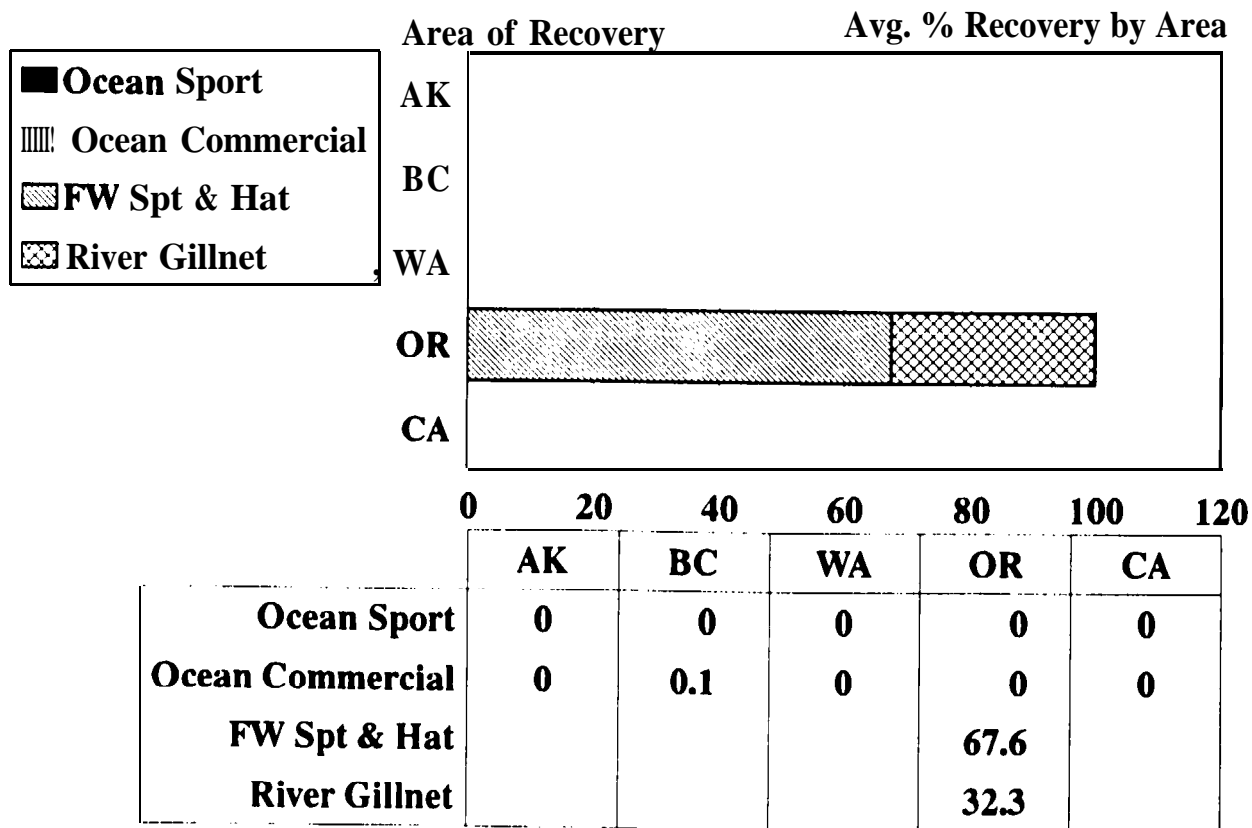


Avg. >0.01 % Survival

Figure 45.

Irrigon (Imnaha Stock) Summer Steelhead Released in Sheep Creek (Grande Ronde)

1986 - 1990 Brood Year



Avg. 0.60 % Survival

Figure 46.

Rapid River Spring Chinook (Lookingglass Hat) Released in Lookingglass Cr.

1985 - 1989 Brood Year

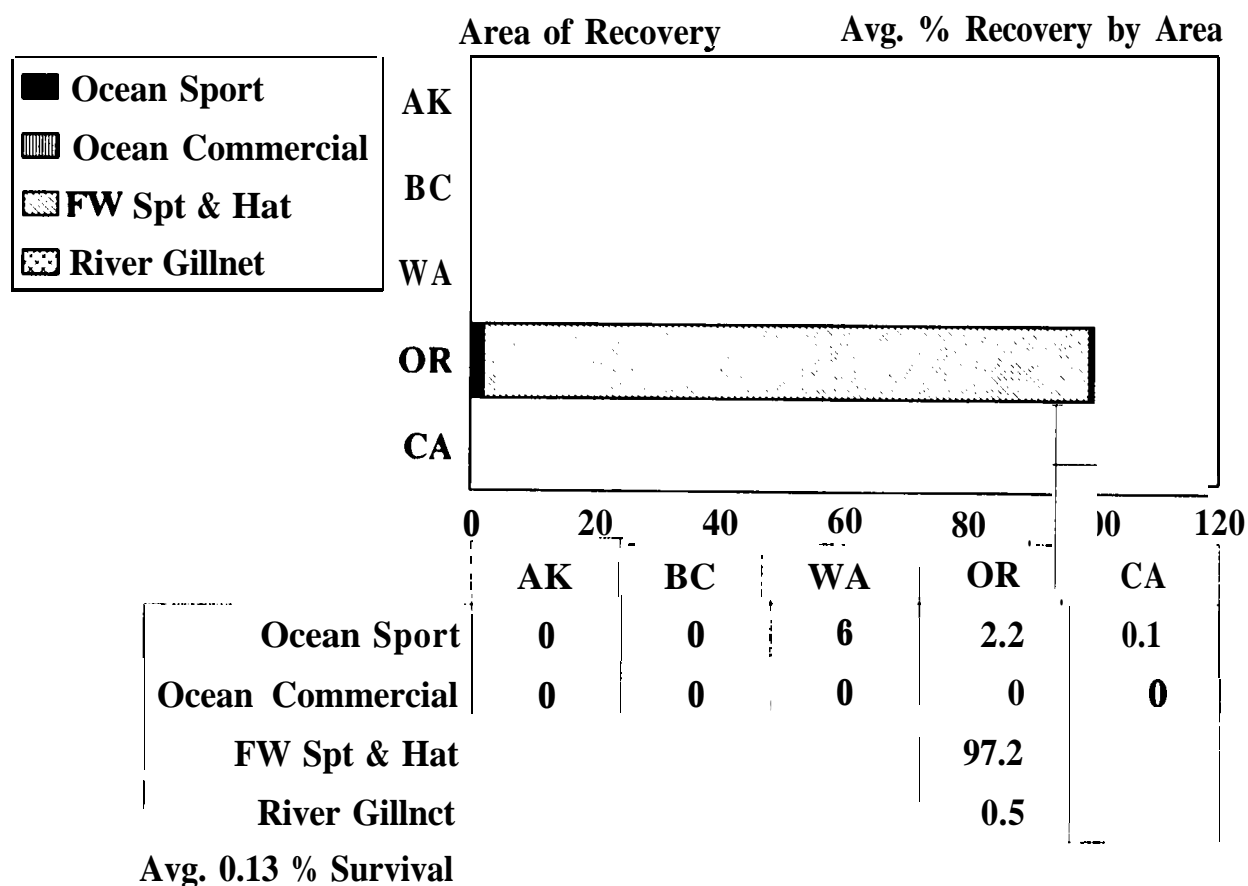


Figure 47.

Lookingglass Spring Chinook Released in Lookingglass Creek

1985 - 1986 Brood Year

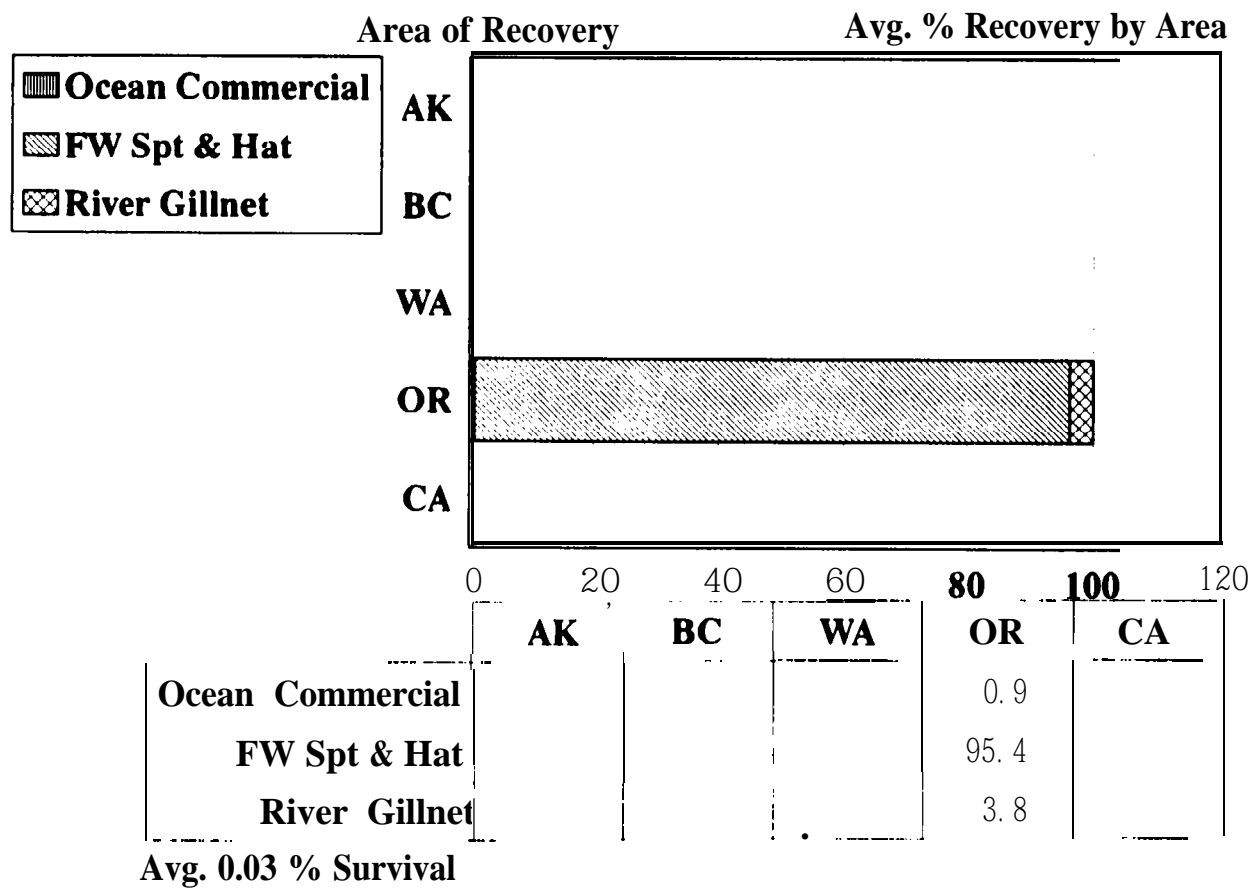


Figure 48.

Imnaha Spring Chinook (Lookingglass Hat) Released in Imnaha R

1985 - 1989 Brood Year

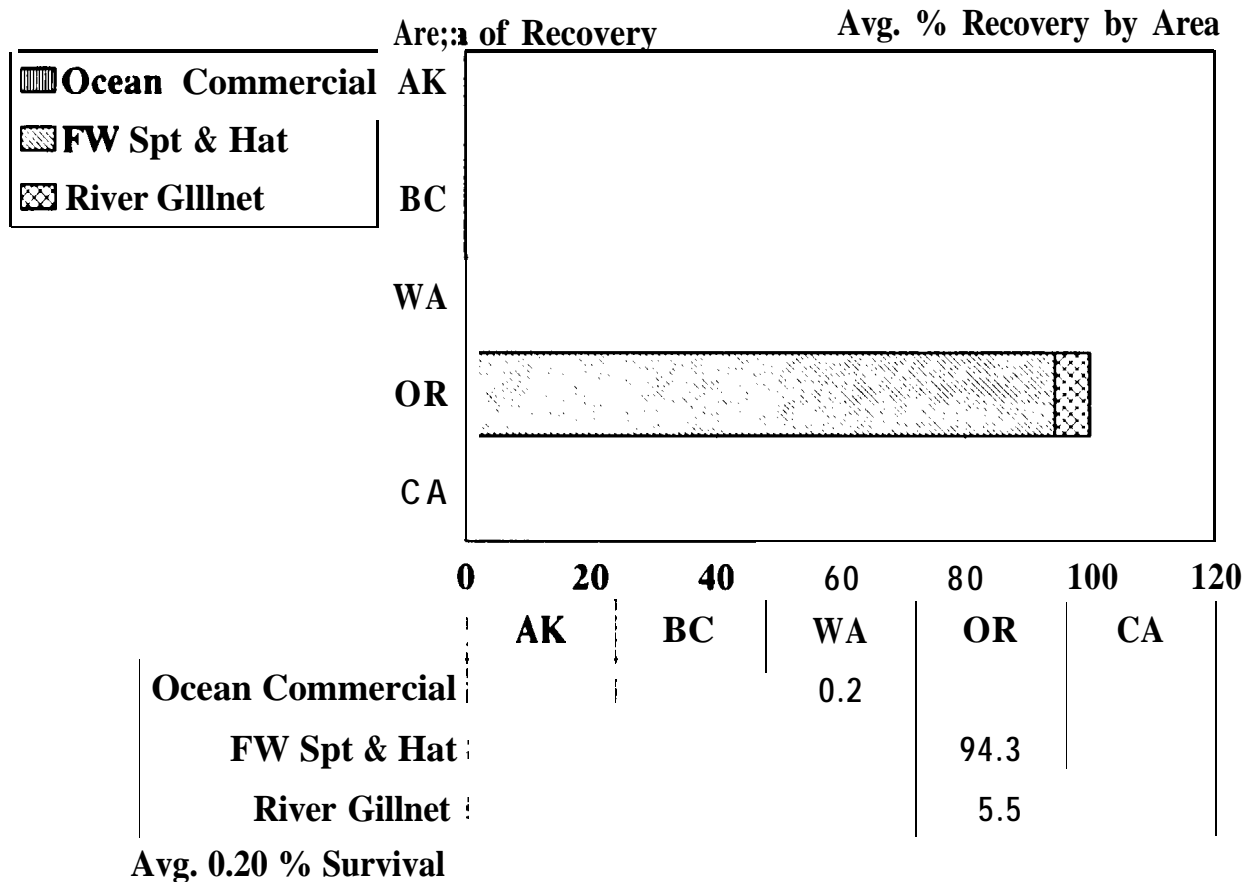


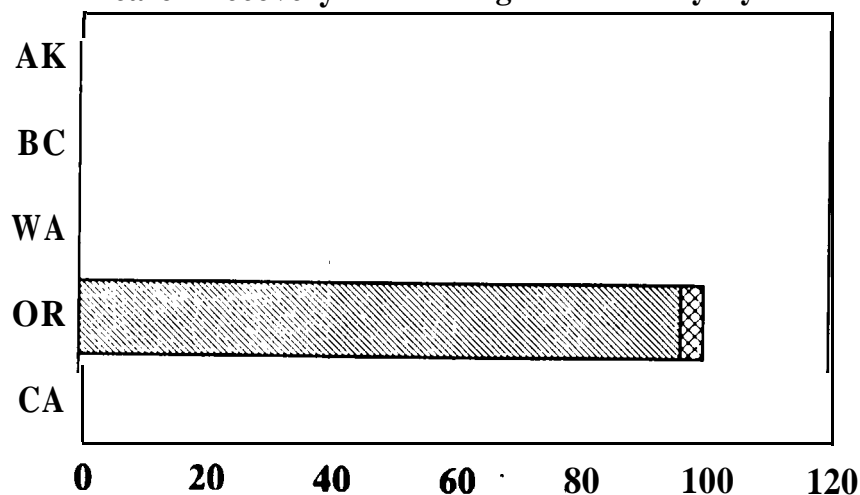
Figure 49.

Carson Spring Chinook (Lookingglass Hat) Released in Big Canyon Cr.

1985 Brood Year

Area of Recovery

Avg. % Recovery by Area



	AK	BC	WA	OR	CA
Ocean Sport	0				
Ocean Commercial	0	0			
FW Spt & Hat				96.4	
River Gillnet				3.6	

Avg. 0.10 % Survival

Figure 50.

Wallowa Hatchery

Wallowa Hatchery is located on the Wallowa River near Enterprise. The Wallowa Hatchery rears and releases summer steelhead and rainbow trout.

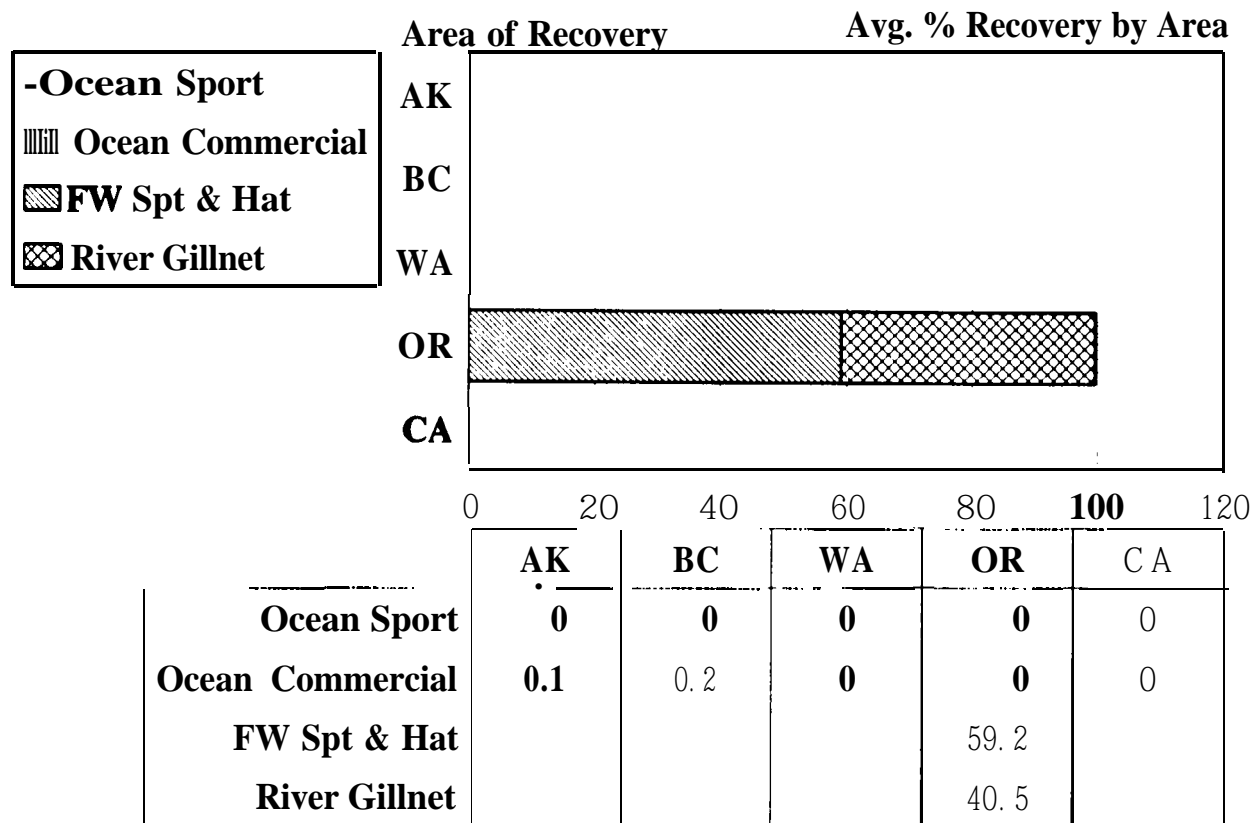
The 1986 to 1990 brood Wallowa stock summer steelhead reared at Irrigon hatchery, acclimated at Wallowa hatchery and released in Spring Creek (Wallowa River) survived at a rate of 0.71% and contributed primarily to the Columbia River freshwater sport and gillnet fisheries (Figure 51).

The 1990 brood Wallowa summer steelhead reared at Irrigon hatchery and released in Big Canyon Creek survived at a rate of 0.94 % and was caught primarily in the Columbia River gillnet and freshwater sport fisheries (Figure 52).

Rainbow trout are not tagged for evaluation.

Irrigon (Wallowa Stock) Summer S tealhead Released in Spring Creek (Wallowa River)

1986 - 1990 Brood Year



Avg. 0.71% Survival

Figure 51.

Irrigon (Wallowa Stock) Summer Steelhead Released in Big Canyon Cr.

1990 Brood Year

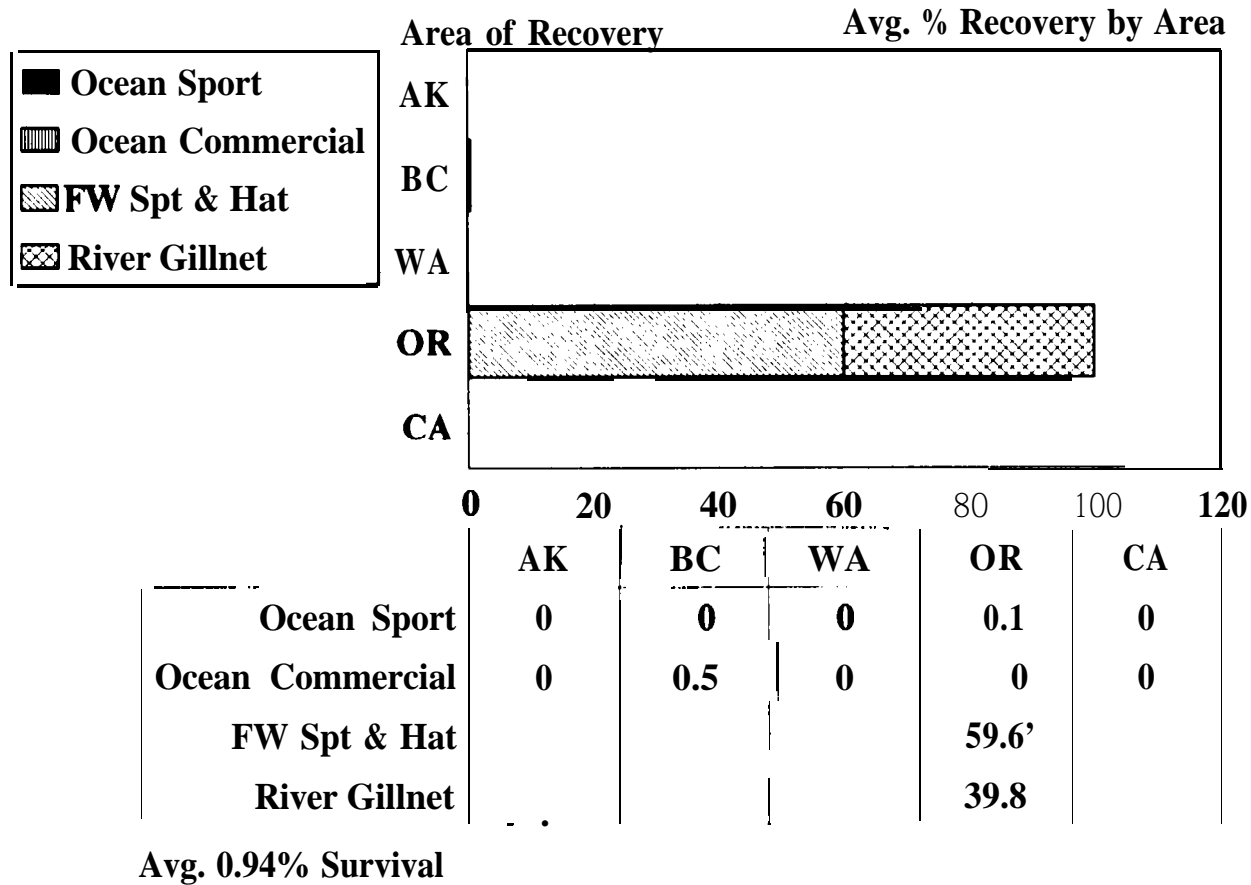


Figure 52.

APPENDIX

Appendix Table 1. Average Percent Recovery (by Fishery) for the Last 5 Completed Brood years

(Chinook 1985 to 1989 broods; Coho 1987 to 1991 broods; Steelhead 1986 to 1990 broods)

Data downloaded September 1995 (through preliminary 1994 returns)

									Percent Recovery for All Areas																							
									Number																							
									Ad Clip				Total	%	Alaska				British Col		Washington		Oregon		Other		California					
									Tagged		Only		Untagged	Released	Surv	Spt		Com		Spt		Com		Spt		Com		Gillnet	Freshwater	Spt	Com	
Fall Chinook																																
Hatchery	Stock	Release Site	Brood	Tagged	Only	Untagged	Released	Surv	Spt	Com	Spt	Com	Spt	Com	Spt	Com	Gillnet	Freshwater	Spt	Com												
Big Creek	Big Creek	Big Cr	1986	309,516	3,036	8,379,938	8,692,492	0.18	0.0	0.0	0.0	26.7	6.8	25.4	0.0	10.6	2.3	27.0	0.0	1.1												
Big Creek	Big Creek	Big Cr	1987	313,024	4,032	8,534,864	8,651,920	0.05	0.0	0.0	1.8	25.7	19.5	9.0	2.3	3.3	2.1	36.6	0.0	0.0												
Big Creek	Big Creek	Big Cr	1988	316,016	965	10,258,999	10,576,019	0.17	0.0	0.0	1.7	22.0	4.6	20.0	0.0	2.7	8.3	40.8	0.0	0.0												
Big Creek	Big Creek	Big Cr	1989	216,569	1,791	9,528,456	9,748,638	0.12	0.0	4.3	0.0	21.3	11.9	20.6	0.0	4.2	1.0	36.7	0.0	0.0												
Average				268,786	2,464	9,175,564	9,468,615	0.13	0.0	1.1	0.8	23.9	10.7	18.8	0.6	5.2	3.4	35.3	0.0	0.3												
Big Creek	Rogue R	Big Cr	1985	145,544	244	244	146,032	2.10	0.0	0.0	0.2	2.8	1.1	1.6	3.3	54.9	8.5	16.3	0.4	11.1												
Big Creek	Rogue R	Big Cr	1986	156,574	590	1,180	158,344	2.27	0.0	0.0	0.6	2.9	5.5	2.1	3.8	46.7	3.2	29.4	1.9	3.9												
Big Creek	Rogue R	Big Cr	1987	148,571	5,293	0	132,980	2.26	0.0	0.0	0.1	3.1	6.5	2.1	4.5	41.8	2.4	36.3	0.2	3.1												
Big Creek	Rogue R	Big Cr	1988	155,334	531	0	155,885	1.37	0.0	0.0	0.1	3.1	2.2	3.7	4.0	31.0	4.5	47.0	1.4	3.1												
Big Creek	Rogue R	Big Cr	1989	152,891	3,040	227,751	383,482	0.78	0.0	0.0	0.0	2.7	5.8	1.0	2.6	46.4	0.7	34.7	0.1	5.9												
Average				151,743	1,940	45,835	195,337	1.76	0.0	0.0	0.2	2.9	4.2	2.1	3.6	44.2	3.9	32.7	0.8	5.4												
Bonneville	Tanner Cr	Tanner Cr	1986	421,391	5,200	9,457,858	9,884,249	0.15	0.0	0.0	0.5	14.8	1.2	22.9	0.1	16.2	9.4	34.9	0.0	0.0												
Bonneville	Tanner Cr	Tanner Cr	1987	315,679	3,998	9,785,318	10,104,995	0.02	0.0	0.0	0.4	24.2	2.3	43.6	0.0	0.7	8.1	20.8	0.0	0.0												
Bonneville	Tanner Cr	Tanner Cr	1988	316,268	2,203	11,319,521	11,638,012	0.22	0.0	0.0	0.7	15.7	14.6	17.1	1.3	4.4	5.1	41.3	0.0	0.0												
Bonneville	Tanner Cr	Tanner Cr	1989	214,085	562	6,249,876	6,464,523	0.15	0.0	0.0	0.5	30.1	9.9	13.0	0.0	3.9	2.3	40.4	0.0	0.0												
Average				316,861	2,991	9,203,093	9,522,945	0.14	0.0	0.0	0.5	21.2	7.0	24.2	0.4	6.3	6.2	34.4	0.0	0.0												
Bonneville	URB	Tanner Cr	1985	427,615	7,040	1,407,871	1,842,326	2.82	0.3	10.6	0.2	23.5	1.1	0.8	0.2	0.8	34.5	27.7	0.3	0.0												
Bonneville	URB	Tanner Cr	1986	562,442	4,208	515,408	1,102,056	1.06	0.1	11.4	1.1	24.9	0.9	2.2	0.1	3.0	22.3	33.7	0.1	0.3												
Bonneville	URB	Tanner Cr	1987	183,508	1,163	5,621,188	5,805,859	0.28	0.0	5.7	0.7	14.5	0.9	1.0	0.1	0.0	50.5	28.5	0.0	0.0												
Bonneville	URB	Tanner Cr	1988	100,166	1,528	0	101,692	0.13	0.0	6.1	0.0	27.6	0.0	2.7	0.0	0.0	29.4	34.0	0.0	0.0												
Bonneville	URB	Tanner Cr	1989	96,382	1,256	0	99,638	0.24	0.0	32.5	0.0	18.7	0.0	1.7	0.0	0.0	16.6	30.6	0.0	0.0												
Average				278,423	3,039	1,508,653	1,790,315	0.91	0.1	13.3	0.4	21.9	0.6	1.7	0.1	0.8	30.7	30.5	0.1	0.1												
Bonneville	URB	Mid-Columbia R	1988	101,050	508	0	101,558	0.16	0.0	8.8	0.0	21.0	1.5	0.0	0.0	0.0	51.2	17.6	0.0	0.0												
Bonneville	URB	Mid-Columbia R	1989	93,127	6,559	0	99,686	0.31	0.0	21.2	0.0	29.5	1.5	0.0	0.0	0.0	24.2	23.7	0.0	0.0												
Average				97,089	3,534	0	100,622	0.24	0.0	15.0	0.0	25.3	1.5	0.0	0.0	0.0	37.7	20.7	0.0	0.0												
Bonneville	URB	Umatilla R	1985	100,127	1,280	110,119	211,506	2.28	0.5	9.2	2.6	25.5	1.8	2.7	0.5	1.8	36.5	16.8	0.0	0.0												
Bonneville	URB	Umatilla R	1986	156,960	1,146	40,235	200,341	2.86	0.0	7.4	0.7	27.0	3.1	3.3	1.0	2.3	22.9	32.2	0.2	0.0												
Bonneville	Washington Bright	Umatilla R	1987	86,408	4,281	3,400	94,089	0.49	0.3	10.3	3.6	25.0	3.6	2.0	0.2	3.9	27.1	23.6	0.0	0.4												
Average				115,165	2,229	51,251	168,645	1.86	0.3	9.0	2.3	25.8	2.8	2.7	0.6	2.7	28.6	24.9	0.1	0.1												

Appendix Table 1. Average Percent Recovery (by Fishery) for the Last 5 Completed Brood years
1985 to 1989 broods; Coho 1987 to 1991 broods; Steelhead 1988 to 1990 broods)
(Chinook)

Data downloaded September 1995 (through preliminary 1994 returns)

									Percent Recovery for All Areas														
									Number														
									Ad Clip		Total	%					Freshwater						
Fall Chinook													Alaska	British Col	Washington	Oregon	Other		California				
Hatchery	Stock	Release Site	Brood	Tagged	Only	Untagged	Released	Surv	Spt	Corn	Spt	Corn	Spt	Corn	Spt	Corn	Gilnet	Freshwater	Spt	Corn			
Irigon	URB	Umatilla R	1985	209,145	4,858	1,815,799	2,029,602	0.51	0.0	9.1	0.9	21.5	1.1	0.4	0.5	1.6	44.3	20.9	0.0	0.0			
Irigon	Washington Bright	Umatilla R	1986	122,988	4,589	1,351,245	1,477,488	0.82	0.3	13.8	0.8	27.0	0.8	1.3	a4	1.3	37.6	16.4	as	0.0			
Irigon	Washington Bright	Umatilla R	1987	198,285	0	1,088,472	1,886,757	0.07	0.0	10.1	0.0	33.3	1.4	0.0	0.0	0.0	24.5	21.8	0.0	0.0			
Irigon	Washington Bright	Umatilla R	1988	307,482	8,703	2,234,472	2,550,667	0.11	0.0	16.6	20	28.5	0.0	0.2	0.1	al	23.9	28.8	0.0	0.0			
Irigon	URB	Umatilla R	1989	295,886	4,830	241,083	541,809	0.13	0.0	8.8	2.4	33.5	2.1	0.9	0.0	0.0	28.7	23.5	0.0	0.0			
Average				228,783	4,556	1,468,214	1,697,285	0.33	0.1	13.5	1.2	28.8	1.1	0.6	0.2	0.6	31.8	22.3	0.1	0.0			
Klaskanine	Big Creek	Klaskanine R, N Fk	1986	194,657	10,463	3,555,480	3,760,600	0.15	0.0	0.2	0.0	39.8	1.4	13.2	0.2	9.4	28.3	6.8	0.3	0.4			
Klaskanine	Big Creek	Klaskanine R, N Fk	1987	203,546	1,857	3,548,953	3,754,356	0.01	0.0	0.0	2.2	0.0	0.0	34.8	0.0	0.0	50.1	12.9	0.0	0.0			
Klaskanine	Big Creek	Klaskanine R, N Fk	1988	209,187	3,805	3,818,255	4,031,047	0.09	0.0	0.0	3.1	47.7	4.1	11.0	0.0	4.7	10.2	19.2	0.0	0.0			
Average				202,463	5,308	3,640,896	3,848,668	0.08	0.0	0.1	1.8	29.2	1.8	19.7	0.1	4.7	29.5	13.0	0.1	0.1			
S F Klask Pd	Rogue R	Klaskanine R, S Fk	1985	30,089	2,848	218,545	251,482	0.82	0.0	0.0	0.0	24	0.0	0.8	4.1	55.6	30.8	3.3	1.4	1.6			
S F Klask Pd	Rogue R	Klaskanine R, S Fk	1986	2,780	20	17,220	20,000	0.36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.0	30.0	10.0	0.0	0.0			
S F Klask Pd	Rogue R	Klaskanine R, S Fk	1987	26,481	161	53,128	79,770	3.03	0.0	0.0	0.0	1.5	3.1	3.7	to	47.4	28.2	10.2	1.4	3.5			
S F Klask Pd	Rogue R	Youngs R	1989	50,336	1,125	76,250	127,711	1.35	0.0	0.0	0.0	1.7	2.2	1.0	2.2	39.6	36.3	15.4	0.0	1.7			
Average				27,412	1,039	91,286	119,736	1.39	0.0	0.0	0.0	1.4	1.3	1.4	2.3	50.7	30.8	9.7	0.7	1.7			
S F Klask Pd	Tanner Cr	SF Klask & Youngs R	1985	00.043	5,583	2,904,840	3,009,486	0.12	0.0	0.0	0.0	54.4	4.0	3.5	0.0	3.4	16.9	17.8	0.0	0.0			
S F Klask Pd	Big Creek	SF Klask & Youngs R	1986	135,975	6,576	1,199,910	1,342,481	0.08	0.0	0.0	11.8	27.2	3.6	0.8	0.0	7.3	28.5	20.9	0.0	0.0			
S F Klask Pd	Big Creek	SF Klask & Youngs R	1987	139,880	11,755	2,928,035	3,079,450	0.04	0.0	0.0	0.1	31.1	0.0	11.7	0.0	14.2	37.5	5.4	0.0	0.0			
Average				124,893	7,971	2,344,282	2,477,128	0.08	0.0	0.0	4.0	37.6	2.5	5.3	0.0	8.3	27.6	14.7	0.0	0.0			
Stayton Pond	Tanner Cr	- R	1985	183,215	12,040	4,738,291	4,933,546	0.10	0.0	0.0	0.0	16.0	7.7	17.9	0.0	5.3	a0	34.2	0.0	0.0			
Stayton Pond	Tanner Cr	Willamette R	1986	198,944	1,733	5,570,245	5,768,922	0.09	0.0	0.0	0.0	120	25	242	0.0	14.0	0.0	46.1	12	0.0			
Stayton Pond	T - Q	Willamette R	1987	193,340	5.19	4,859,788	5,058,277	a13	0.0	0.0	1.2	29.1	62	11.4	1.8	4.0	0.0	48.3	0.0	0.0			
Stayton Pond	Tanner Cr	Willamette R	1988	173,719	2,777	4,418,636	4,595,132	0.16	0.0	0.0	0.0	18.2	7.8	0.0	3.4	3.2	1.7	58.8	0.0	0.0			
Stayton Pond	Tanner Cr	- R	1989	234,784	8,613	5,628,255	5,869,652	0.87	0.0	0.0	1.5	18.3	5.4	22.2	1.2	5.6	0.7	47.2	0.0	0.0			
Average				198,400	6,082	5,042,643	5,245,108	0.25	0.0	0.0	0.5	20.5	5.9	16.9	1.3	6.4	2.1	48.1	0.2	0.0			
Spring Chinook																							
Bonneville	Carson	Hood R, W Fk	1986	50,744	1,015	98,180	149,939	0.33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12	a2	94.6	0.0	0.0			
Bonneville	Lookingglass Cr	Hood R, W Fk	1987	52,248	454	81,615	134,317	0.07	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0			
Bonneville	Lookingglass Cr	Hood R, W Fk	1988	52,891	613	139,689	193,193	0.21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	97.4	0.0	0.0			
Bonneville	Lookingglass Cr	Hood R, W Fk	1989	52,088	979	72,280	125,327	0.03	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0			
Average				51,988	785	97,941	150,694	an	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.7	98.0	0.0	0.0			

Data downloaded September 1995 (through preliminary 1994 returns)									Percent Recovery for All Areas													
Spring Chinook				Number																		
				Ad Clip			Total	%	Alaska				British Col		Washington		Oregon		Freshwater		California	
				Brood	Tagged	Only	Untagged	Released	Surv	Spt	Com	Spt	Com	Spt	Com	Spt	Com	Gillnet	Freshwater	Spt	Com	
Hatchery	Stock	Release Site																				
Bonneville	Carson	Umatilla R	1986	156,649	4,100	47,360	208,109	0.82	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	98.6	0.0	0.0		
Bonneville	Lookingglass Cr	Umatilla R	1987	233,708	1,465	2,705	237,483	0.24	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	99.7	0.0	0.0		
Bonneville	Lookingglass Cr	Umatilla R	1988	320,377	2,402	73,586	398,375	0.31	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	6.7	93.3	0.0	0.0		
Bonneville	Lookingglass Cr	Umatilla R	1989	308,924	2,846	43,321	301,935	0.08	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.1	0.0	0.0		
Average				254,915	2,703	41,746	285,971	0.36	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	2.0	97.7	0.0	0.0		
Clackamas	Clackamas R	Clackamas R	1985	78,408	4,789	694,690	778,088	0.07	0.0	22.9	0.0	1.2	0.0	0.0	0.0	0.0	15.9	80.0	0.0	0.0		
Clackamas	Clackamas R	Clackamas R	1986	69,408	2,498	0	71,907	0.51	0.0	8.5	0.3	2.6	0.0	0.8	0.0	0.0	13.3	74.6	0.0	0.0		
Clackamas	Clackamas R	Clackamas R	1987	61,871	1,547	1,065,524	1,128,942	0.86	0.0	10.8	0.0	2.3	0.0	0.0	0.0	0.0	2.9	83.9	0.0	0.0		
Clackamas	Clackamas R	Clackamas R	1988	91,832	1,739	1,190,682	1,284,253	1.17	0.3	10.4	1.8	7.1	3.5	7.6	1.9	0.3	0.3	88.8	0.0	0.0		
Clackamas	Clackamas R	Clackamas R	1989	136,977	672	496	138,145	0.35	0.0	16.2	0.0	5.7	0.4	3.8	0.0	1.1	1.2	71.7	0.0	0.0		
Average				87,700	2,249	560,318	680,267	0.59	0.1	13.8	0.4	3.8	0.8	2.4	0.4	0.3	6.7	71.4	0.0	0.0		
Clackamas	S Santiam R	Clackamas R	1986	15,553	265	0	15,838	2.29	0.0	11.0	0.0	4.8	1.7	0.0	0.0	0.0	13.8	88.8	0.0	0.0		
Clackamas	M Willamette R	Clackamas R	1987	15,417	632	287,904	303,953	1.01	0.6	10.9	0.0	2.6	0.0	0.0	0.0	0.0	5.8	80.1	0.0	0.0		
Average				15,485	450	143,952	159,896	1.65	0.3	11.0	0.0	3.7	0.9	0.0	0.0	0.0	9.8	74.5	0.0	0.0		
Lookingglass	Carson	Big Canyon Cr	1985	78,857	1,717	3,720	84,294	0.10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	96.4	0.0	0.0		
Lookingglass	Imnaha R	Lookingglass Cr	1985	105,354	1,708	16,471	123,533	0.14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.7	74.3	0.0	0.0		
Lookingglass	Imnaha R	Imnaha R	1986	186,350	11,331	1,825	199,508	0.20	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.3	98.5	0.0	0.0		
Lookingglass	Imnaha R	Imnaha R	1987	134,591	7,447	262	142,320	0.16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0		
Lookingglass	Imnaha R	Imnaha R	1988	226,268	2,183	21,344	249,795	0.37	0.0	0.0	0.0	0.0	0.2	1.0	0.0	0.0	0.3	98.6	0.0	0.0		
Lookingglass	Imnaha R	Imnaha R	1989	187,990	4,438	95,242	267,670	0.12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0		
Average				164,111	5,421	27,033	198,585	0.20	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	5.5	94.3	0.0	0.0		
Lookingglass	Lookingglass Cr	Lookingglass Cr	1985	401,705	7,630	172,557	536,707	0.06	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	7.6	90.7	0.0	0.0		
Lookingglass	Lookingglass Cr	Lookingglass Cr	1986	66,213	870	13,835	100,918	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0		
Average				243,959	4,350	93,196	319,613	0.03	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	3.8	95.4	0.0	0.0		
Lookingglass	Rapid R (Idaho)	Lookingglass Cr	1985	99,742	494	292,880	393,116	0.04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0		
Lookingglass	Rapid R (Idaho)	Lookingglass Cr	1986	325,705	9,127	3,327	298,677	0.12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	97.3	0.2	0.0		
Lookingglass	Rapid R (Idaho)	Lookingglass Cr	1987	342,199	3,937	13,538	318,335	0.04	0.0	0.0	0.0	0.0	0.0	0.0	11.1	0.0	0.0	88.9	0.0	0.0		
Lookingglass	Rapid R (Idaho)	Lookingglass Cr	1988	171,234	4,139	444,286	619,639	0.36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0		
Lookingglass	Rapid R (Idaho)	Lookingglass Cr	1989	171,712	1,196	158,724	331,634	0.11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0		
Average				222,118	3,779	182,547	362,280	0.13	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.5	97.2	0.0	0.0		

Appendix Table 1. Average Percent Recovery (by Fishery) for the Last 5 Completed Brood years

(Chinook 1985 to 1989 broods; Coho 1987 to 1991 broods; Steelhead 1986 to 1990 broods)

Data downloaded September 1995 (through preliminary 1994 returns)

Spring Chinook			Number						Percent Recovery for All Areas											
			Ad Clip			Total	%	Alaska		British Col		Washington		Oregon		Freshwater		California		
			Tagged	Only	Untagged	Released	Surv	Spt	Corn	Spt	Corn	Spt	Corn	Spt	Corn	Gillnet	Freshwater	Spt	Corn	
Hatchery	Stock	Release Site	Brood																	
Imigon	Rapid R (Idaho)	Lookingglass Cr	1986	122,906	1,770	49,298	173,974	0.00	00	0.0	00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imigon	Rapid R (Idaho)	Lookingglass Cr	1987	125,921	2,669	12,289	46,723	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imigon	Rapid R (Idaho)	Lookingglass Cr	1988	123,168	3,427	105	126,700	0.00	0.0	00	0.0	0.0	00	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average				123,999	2,669	20,564	115,798	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0
Marion Forks	N Santiam R	Santiam R & N Fk	1985	31,381	1,105	58,960	91,446	0.91	0.4	0.0	0R	4.2	0.0	3.8	0.0	0.0	18.6	68.2	0.0	3.8
Marion Forks	N - R	Santiam R & N Fk	low	26,055	4,280	159	30,474	1.62	0.2	10.7	0.8	7.0	0.0	1.5	0.0	0.0	120	87.8	0.0	0.0
Marion Forks	N Santiam R	Santiam R & N Fk	1987	30,076	182	0	30,258	1.51	a2	12.8	0.0	27	0.0	20	0.0	0.0	a0	m.4	0.0	0.0
Marion Forks	N Santiam R	Santiam R & N Fk	1988	31,918	669	417,764	450,351	1.17	0.0	3.9	1.0	3.4	0.0	4.7	0.0	02	0.6	86.2	0.0	0.0
Marion Forks	N Santiam R	Santiam R & N Fk	1989	31,683	1,218	0	32,901	0.59	0.0	126	0.0	0.0	0.0	1.1	0.0	0.0	1.0	85.3	0.0	0.0
Average				30,223	1,487	95,377	127,086	1.20	0.2	a0	0.4	3.5	0.2	2.6	0.0	0.0	7.6	78.8	0.0	0.8
Marion Forks	N Santiam R	Santiam R, S Fk	1985	32,173	MI	59,117	92,231	0.33	0.0	3.7	0.0	0.0	0.0	0.0	0.0	27	27.8	36.8	0.0	0.0
Marion Forks	N Santiam R	Santiam R, S Fk	1986	25,600	5,581	0	31,181	1.03	0.0	0.5	0.8	3.0	0.0	a2	0.0	0.0	0.5	78.1	0.0	0.0
Marion Forks	N Santiam R	Santiam R, S Fk	1987	29,305	446	0	29,751	1.56	0.0	0.4	0.0	3.5	0.4	4.4	0.0	0.0	5.0	77.2	0.0	0.0
Average				29,028	2,323	10,700	51,054	1.27	0.0	7.5	0.3	25	0.1	1.5	0.0	0.0		73.0	0.0	0.0
McKenzie	McKenzie R	McKenzie R	1985	58,030	4244	330,223	392,497	1.00	02	27	0.0	7.7	0.3	1.0	0.0	0.0	25.5	82.6	0.0	0.0
McKenzie	McKenzie R	McKenzie R	1986	58,352	3,098	0	61,450	1.56	0.1	11.6	0.3	3.0	0.0	0.5	0.0	0.0	14.1	70.4	0.0	0.0
McKenzie	McKenzie R	McKenzie R	1987	61,084	1,597	658,487	721,168	1.13	0.3	6.7	0.0	5.4	0.0	0.2	0.1	0.0	02	78.2	0.0	0.0
McKenzie	McKenzie R	McKenzie R	1988	61,158	1,610	182,344	245,112	0.61	0.1	21.3	0.1	4.3	1.8	1.0	0.0	0.0	0.3	8.2	0.0	1.1
McKenzie	McKenzie R	McKenzie R	1989	85,641	1,233	903	87,777	0.26	0.0	14.1	0.0	5.9	0.0	0.6	1.0	0.0	0.6	77.8	0.0	0.0
Average				64,853	2,356	234,391	301,601	0.03	0.1	11.3	0.1	5.3	0.4	0.8	0.2	0.0	0.0	71.6	0.0	0.2
Round Butte	Deschutes R	Deschutes R	1985	112,898	4,287	148.87	265,862	1.58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.3	98.2	0.0	0.0
Round Butte	Deschutes R	Deschutes R	1986	108,809	5,533	150	115,492	1.93	0.0	0.0	0.0	a1	0.0	0.1	0.0	0.0	02	99.6	0.0	0.0
Round-	- R	Deschutes R	1987	112,843	6,210	0	110,053	1.42	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.6	98.0	0.0	0.0
Round Butte	Deschutes R	Deschutes R	1988	122,245	2,355	134.847	259,447	1.72	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	a4	99.6	0.0	0.0
Round Butte	Deschutes R	Deschutes R	1989	120,207	2,233	148,451	270,891	0.78	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	99.9	0.0	0.0
Average				115,600	4,120	86,429	206,149	1.49	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.1	as	99.1	0.0	0.0
South Santiam	S Santiam R	Santiam R, S Fk	1985	25,956	106	110,373	145,435	1.38	0.0	as	3.8	8.1	0.0	a6	0.6	0.0	152	63.5	0.0	0.0
South Santiam	S Santiam R	Santiam R, S Fk	1987	24,640	357	484	25,481	1.28	0.0	1a4	0.0	ho	1.3	0.6	0.0	1.0	9.8	70.0	0.0	0.0
South Santiam	S Santiam R	Santiam R, S Fk	1988	64,018	1,367	705,550	770,935	0.21	0.0	0.0	1.3	11.1	0.0	0.0	0.0	0.0	0.0	78.7	0.0	0.0
South Santiam	S - R	Santiam R, S Fk	1989	353,728	7,823	740,708	1,102,257	0.73	0.0	14.5	0.3	5.7	0.4	23	0.0	0.0	3.3	73.5	0.0	0.0
Average				117,085	2,413	391,529	511,027	0.80	0.0	10.8	1.4	7.7	a4	0.9	0.2	0.3	7.1	71.7	0.0	0.0

Appendix Table 1 Average Percent Recovery (by Fishery) for the Last 5 Completed Brood years

(Chinook 1985 to 1989 broods; Coho 1987 to 1991 broods; Steelhead 1988 to 1990 broods)

Data downloaded September 1995 (through preliminary 1994 returns)

				Percent Recovery for All Areas																
				Number				%												
				Ad Clip			Total		Alaska		British Col		Washington		Oregon		Freshwater		California	
Hatchery	Stock	Release Site	Brood	Tagged	Only	Untagged	Released	Surv	Spt	Com	Spt	Com	Spt	Com	Spt	Com	Gillnet	Freshwater	Spt	Com
Spring Chinook																				
South Santiam	S Santiam R	Willamette R	1666	23,726	1,647	0	25,375	1.17	0.0	9.3	0.0	4.9	0.0	2.0	0.0	1.2	19.5	63.2	0.0	0.0
South Santiam	S Santiam R	W - R	1667	25,176	203	86,312	111,693	1.00	0.0	10.1	0.0	6.0	0.0	0.0	0.6		15.5	58.7	0.0	0.0
			Average	24,453	925	43,156	66,534	1.06	0.0	14.2	0.0	5.5	0.0	1.0	0.0	1.0	17.5	61.0	0.0	0.0
S F Klask Pd	M Willamette R	Klaskanine R, S Fk	1988	28,050	710	87,319	116,079	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
S F Klask Pd	M Willamette R	Klaskanine R, S Fk	1989	27,491	1,134	90,049	118,674	0.04	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	40.0	50.0	0.0	0.0
			Average	27,771	622	88,684	117,377	0.02	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	20.0	75.0	0.0	0.0
S F Klask Pd	M W - R	Youngs R	1666	52,584	471	110,456	163,613	0.44	0.0	7.4	0.0	0.3	0.0	0.2	0.0	0.0	60.5	31.6	0.0	0.0
S F Klask Pd	M W - R	Youngs R	1060	28,688	136	192,984	221,790	0.09	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	720	ho	0.0	0.0
			Average	40,636	305	151,711	192,652	0.27	0.0	13.7	0.0	0.2	0.0	0.1	0.0	0.0	66.3	10.6	0.0	0.0
Willamette	M Willamette R	Willamette R, M Fk	1988	156,918	4,707	1,137,570	1,297,257	2.09	0.0	4.4	0.0	3.3	0.2	1.5	0.0	0.1	101	722	0.0	0.0
Willamette	M W - R	Willamette R, M Fk	1667	164,064	2,782	1,183,285	1,258,366	9.76	0.0	5.9	0.0	2.6	0.5	0.2	0.0	0.0	22	88.8	0.0	0.0
Willamette	M Willamette R	Willamette R, M Fk	1989	526,743	5,088	415,627	947,458	0.51	0.0	0.6	0.1	3.1	0.0	1.1	0.0	0.0	1.5	64.5	0.0	0.0
			Average	224,955	4,224	722,386	951,545	1.12	0.0	6.2	0.1	1.0	0.2	0.7	0.1	0.0	6.6	62.6	0.1	0.0
Summer Chinook																				
Bonneville	URB	Tanner Cr	1986	100,456	2,311	328,451	431,218	0.22	0.9	14.9	4.4	18.9	0.3	1.5	0.0	2.6	27.2	29.2	0.0	0.0
Coho																				
Big Creek	Big Creek	Big Cr	1987	100,126	1,297	464,641	566,064	242	0.0	0.0	0.0	4.4	16.7	23	10.2	15.7	6.0	31.6	1.6	1.4
Big Creek	Big Creek	Big Cr	1666	108,636	2,100	523,697	634,433	4.22	0.0	0.0	0.0	1.0	6.7	1.3	262	14.7	10.7	36.3	1.0	1.2
Big Creek	Big Creek	Big Cr	1989	101,837	3,110	529,835	634,782	2.85	0.0	0.0	0.0	0.5	5.0	1.0	31.2	120	5.4	442	0.4	0.5
Big Creek	Big Creek	Big Cr	1990	53,963	600	406,342	553,925	0.21	0.0	0.0	0.0	1.6	10.2	0.0	14.4	0.0	11.0	do.3	1.6	0.0
Big Creek	Big Creek	Big Cr	1991	54,907	704	504,585	560,176	0.63	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.0	26	622	0.0	0.0
			Average	63,606	1,562	566,416	593,676	2.13	0.0	0.0	0.0	2.7	8.1	0.0	17.0	25	7.5	53.5	1.1	0.6
Big Creek	Big Creek	Tussock R	1991	28,885	88	33,079	60,052	0.04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0

Appendix Table 1. Average Percent Recovery (by Fishery) for the Last 5 Completed Brood years

(Chinook 1985 to 1989 broods; Coho 1987 to 1991 broods; Steelhead 1986 to 1990 broods)

Data downloaded September 1995 (through preliminary 1994 returns)

Coho			Number						Percent Recovery for All Areas											
			Ad Clip			Total	%	Alaska		British Col		Washington		Oregon		Freshwater		California		
			Brood	Tagged	Only	Untagged	Released	Spt	Com	Spt	Com	Spt	Com	Spt	Com	Gillnet	Freshwater	Spt	Com	
Hatchery	Stock	Release Site																		
Bonneville	Tanner Cr	Tanner Cr	1987	83,194	1,415	1,674,393	1,759,002	1.67	0.0	0.0	0.0	5.9	15.0	4.1	14.6	16.1	6.7	30.5	2.9	4.2
Bonneville	Tanner Cr	T - Q	1988	76,489	2742	1,570,942	1,650,173	3.15	0.0	0.0	0.0	1.7	3.7	0.6	11.6	13.4	22.2	424	1.6	2.6
Bonneville	T - Q	Tanner Cr	1660	60,363	4 %	1,654,589	1,724,405	2.05	0.0	0.0	0.0	0.0	112	1.2	25.4	5.9	23	53.1	0.1	0.0
Bonneville	Tanner Cr	T - U	1000	62442	1.236	2,092,987	2176,666	0.88	0.0	0.0	0.0	1.3	a4	1.3	14.3	0.0	7.6	61.7	5.3	0.0
Bonneville	Tanner Cr	Tanner Cr	1991	55,053	808	1,056,105	1,111,784	2.28	0.0	0.1	0.0	1.9	0.1	0.0	0.0	0.0	0.5	97.4	0.0	0.0
Average				73,308	1,290	1,609,803	1,684,402	2.00	0.0	0.0	0.0	2.3	7.7	1.4	13.2	7.1	7.9	57.0	2.0	1.4
Cascade	T - U	Umatilla R	1067	80,217	2 6 7 2	150,360	233,289	0.00	0.0	0.0	0.0	1.8	a2	5.6	17.5	16.7	5.0	26.2	7.2	11.6
Cascade	Tanner Cr	Umatilla R	1988	82,140	1.3 0 4	703,188	786,632	3.18	0.0	0.0	0.0	1.0	3.0	1.4	14.0	120	25.0	33.0	42	3.7
Cascade	T - Q	Umatilla R	1066	75,320	3.310	830,778	oa6,426	0.17	0.0	0.0	0.0	0.0	26.6	a7	26.1	3.0	16.0	33.5	0.0	0.0
Cascade	Tanner Cr	Umatilla R	1990	63,071	1.611	876,504	961,386	0.81	0.0	0.0	0.0	1 1	8.0	27	124	0.0	28.0	43.4	6.5	0.0
Cascade	Tanner Cr	Umatilla R	1991	84,078	1,053	807,547	892,678	0.21	0.0	0.0	0.0	2.1	0.5	0.0	0.0	0.0	15.0	82.4	0.0	0.0
Average				80,967	2,032	873,679	756,678	1.05	0.0	0.0	0.0	1.4	8.1	2.1	14.2	6.5	17.4	43.7	3.6	3.1
Cascade	Tanner Cr	Yakima R	1067	61,516	685	136,560	218,763	0.03	0.0	0.0	0.0	2.0	18.3	6.7	24.3	13.0	7.0	126	6.5	6.5
Cascade	Tanner Cr	Yakima R	1988	81,531	1.3 0 4	562,655	66,400	2.00	0.0	0.0	0.0	0.5	5.6	1.0	16.3	14.6	23.7	30.5	4.3	3.7
Cascade	Tanner Cr	Yakima R	m a	77,932	1,015	a11,464	660,41	0.15	0.0	0.0	0.0	1.6	17.6	a4	30.6	1a3	10.4	20.2	0.0	0.0
Cascade	Tanner Cr	Yakima R	1990	62,763	1.432	613,662	667,607	0.07	0.0	0.0	0.0	0.0	17.0	02	432	0.0	15.7	0.6	4.4	0.0
Cascade	Tanner Cr	Yakima R	1991	83,268	1,860	558,683	643,841	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.9	59.1	0.0	0.0
Average				81,408	1,265	488,563	579,286	0.64	0.0	0.0	0.0	1.0	11.9	3.9	22.9	7.6	19.5	26.2	3.0	2.0
Eagle Creek NFH	Clackamas R Late	Collawash R	1987	15,395	1,315	90	16,800	0.38	0.0	0.0	0.0	0.0	13.8	0.0	44.8	32.8	0.0	0.0	8.6	0.0
Klaskanine	Klaskanine R	Klaskanine R, N Fk	1987	31,381	83	1,082,396	1,093,670	2%	0.0	0.0	0.0	3.3	10.0	1.8	20.1	126	32.0	5.6	6.0	7.0
Klaskanine	Klaskanine R	Klaskanine R, N Fk	1 0 6 6	32,091	166	1,382,297	1,394,557	4.63	0.0	0.0	0.1	1.0	3.5	20	12.7	11.4	34.1	25.5	5.2	3.6
Klaskanine	Klaskanine R	Klaskanine R, N Fk	1989	30,159	200	1,228,538	1,258,697	1.57	0.0	0.0	0.0	2.2	5.8	0.0	28.7	as	27.0	24.3	20	0.0
Klaskanine	Klaskanine R	Klaskanine R, N Fk	1990	91,141	66	980,251	1,021,458	0.37	0.0	0.0	0.0	0.0	28.9	0.0	13.5	0.0	41.0	13.3	3.4	0.0
Klaskanine	Klaskanine R	Klaskanine R, N Fk	1991	25,977	0	822,676	848,653	0.32	0.0	0.0	0.0	3.6	0.0	1.2	0.0	0.0	67.5	21.7	0.0	0.0
Average				30,150	106	1,093,272	1,123,527	1.93	0.0	1.2	0.0	2.2	0.6	12	15.0	as	40.5	16.1	3.3	2.3
Sandy	Sandy R	Cedar Cr (Sandy R)	1067	134,253	2,034	924,257	1,060,544	236	0.0	0.0	0.0	0.6	14.0	23	20.4	1a2	5.1	27.3	21	50
Sandy	Sandy R	Cedar Cr (Sandy R)	1666	180,411	8,913	766,026	656,362	4.13	0.0	0.0	0.0	21	ho	1.5	13.9	16.3	121	43.6	1.4	1.1
Sandy	Sandy R	Cedar Cr (Sandy R)	1989	209,688	10,535	235,828	456,061	3.11	0.0	0.0	a1	1.6	8.1	as	28.1	7.3	6.6	47.6	0.4	0.0
Sandy	Sandy R	Cedar Cr (Sandy R)	1990	225,775	1. 6 7 6	ma,526	1,037,280	0.07	0.0	0.0	0.0	0.1	33.9	0.3	0.4	0.0	0.7	55.3	0.3	0.0
Sandy	Sandy R	Cedar Cr (Sandy R)	1991	217,454	2744	802,753	1,022,951	am	0.0	0.0	0.0	7.6	0.0	0.0	0.0	0.0	0.1	92.1	a2	0.0
Average				193,518	5,240	707,679	906,436	211	0.0	0.0	0.0	4.2	126	0.9	14.4	6.2	4.9	53.2	0.9	0.6

Appendix Table 1. Average Percent Recovery (by Fishery) for the Last 5 Completed Brood years

(Chinook 1985 to 1989 broods; Coho 1987 to 1991 broods; Steelhead 1986 to 1990 broods)

Data downloaded September 1995 (through preliminary 1994 returns)

Data downloaded September 1995 (through preliminary 1994 returns)									Percent Recovery for All Areas											
Coho				Number			%	Percent Recovery for All Areas												
				Ad Clip				Total	Percent Recovery for All Areas								Freshwater		California	
Hatchery	Stock	Release Site	Brood	Tagged	Only	Untagged	Released		Surv	Alaska		British Col		Washington		Oregon		Other		California
									Spt	Com	Spt	Com	Spt	Com	Spt	Com	Gillnet	Freshwater	Spt	Com
S F Klask Pd	Sandy R	Klaskanine R	1987	25,701	1,447	285,177	312,325	1.53	0.0	0.0	0.0	4.6	16.3	2.5	16.6	16.0	32.6	6.1	1.0	3.6
S F Klask Pd	Tanner Cr	Klaskanine R, S Fk	1987	26,366	114	246,517	275,000	7.03	0.0	0.0	0.0	2.5	11.3	1.3	16.9	16.6	25.9	120	5.1	6.2
S F Klask Pd	Klaskanine R	Klaskanine R, S Fk	1666	27,126	64	752,130	779,320	5.76	0.0	0.0	0.6	23	3.6	0.6	16.3	11.1	36.6	21.3	3.6	3.7
S F Klask Pd	Sandy R	Klaskanine R, S Fk	1666	26,441	610	757,851	765,102	0.54	0.0	0.0	0.0	0.0	4.0	21	324	5.6	21.6	33.1	0.0	0.0
S F Klask Pd	Klaskanine R	Klaskanine R, S Fk	1990	26,367	536	626,425	653,350	3.17	0.0	0.0	0.0	1.2	124	5.9	11.6	0.0	426	21.2	5.1	0.0
S F Klask Pd	Klaskanine R	Klaskanine R, S Fk	1991	26,617	336	709,774	736,929	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
Average				27,026	373	618,539	645,940	3.30	0.0	0.0	0.1	1.2	6.5	2.0	15.4	6.7	25.4	37.5	2.8	2.4
S F Klask Pd	Clackamas R	Youngs R	1986	47,705	2,420	336,352	386,477	8.16	0.0	0.0	0.0	1.4	3.1	1.7	9.9	6.1	49.8	16.2	3.9	3.9
S F Klask Pd	Clackamas R	Youngs R	1989	109,918	2,360	2,024,753	2,137,061	1.24	0.0	0.0	0.0	2.1	6.1	1.0	26.2	7.4	39.9	14.4	0.8	0.0
S F Klask Pd	Clackamas R	Youngs R	1991	95,616	3,617	1,736,229	1,835,462	0.72	0.0	0.0	0.0	7.0	0.5	0.0	0.0	0.0	91.3	1.2	0.0	0.0
Average				84,413	2,809	1,366,445	1,453,667	3.37	0.0	0.0	0.0	3.5	3.9	0.9	12.0	5.2	60.3	11.3	1.6	1.3
S F Klask Pd	Big Creek	Youngs R	1990	27,439	260	646,753	674,452	1.13	0.0	0.0	0.0	0.0	15.5	3.6	9.4	0.0	55.2	12.9	3.6	0.0
S F Klask Pd	Kalama R	Youngs R	1990	26,139	337	379,500	405,976	0.13	0.0	0.0	0.0	14.3	11.4	17.1	0.0	0.0	45.7	11.4	0.0	0.0
S F Klask Pd	R	Youngs R	1600	52,480	537	350,199	403,226	3.47	0.0	0.0	0.1	26	0.5	5.8	0.5	0.0	55.4	12.3	4.6	0.0
S F Klask Pd	Klaskanine R	Youngs R	1991	26,556	335	99,975	126,866	0.10	0.0	0.0	0.0	11.1	0.0	0.0	0.0	0.0	46.2	40.7	0.0	0.0
Average				39,523	436	225,067	265,046	1.79	0.0	0.0	0.1	7.0	4.8	2.9	4.8	0.0	51.6	26.5	2.3	0.0
S F Klask Pd	Sandy R	Youngs R	1987	26,667	202	125,627	154,486	2.97	0.0	0.0	0.2	5.5	0.0	3.5	16.5	10.7	43.7	2.5	4.6	0.9
S F Klask Pd	Sandy R	Youngs R	1990	53,761	544	664,314	718,619	0.03	0.0	0.0	0.0	0.0	0.2	0.0	10.7	0.0	8.4	0.0	10.7	0.0
Average				41,209	373	364,671	436,553	1.50	0.0	0.0	0.1	26	0.6	1.6	14.6	5.4	56.6	1.3	7.7	as
S F Klask Pd	Tanner Cr	Youngs R	1991	45,416	732	1,262,576	1,326,726	266	0.0	0.0	0.0	24	0.6	0.0	0.0	0.0	93.5	3.6	0.0	0.0
Trojan Pond	Sandy R	Columbia R	1989	27,206	634	92,615	120,655	0.20	0.0	0.0	0.0	0.0	10.0	0.0	34.6	1a4	10.0	27.3	0.0	0.0
Trojan Pond	Sandy R	Columbia R	1991	27,809	62	235,670	263,571	0.16	0.0	0.0	0.0	36.4	4.6	0.0	0.0	0.0	36.4	227	0.0	0.0
Average				27,506	463	164,143	192,113	0.18	0.0	0.0	0.0	16.2	7.8	0.0	17.3	6.2	23.7	25.0	0.0	0.0

Appendix Table 1. Average Percent Recovery (by Fishery) for the Last 5 Completed Brood years

(Chinook 1985 to 1989 broods; Coho 1987 to 1991 broods; Steelhead 1986 to 1990 broods)

Data downloaded September 1995 (through preliminary 1994 returns)

									Percent Recovery for All Areas											
				Number				%												
				Ad Clip			Total		Alaska		British Col		Washington		Oregon		Freshwater		California	
Hatchery	Stock	Release Site	Brood	Tagged	Only	Untagged	Released	Surv	Spt	Com	Spt	Com	Spt	Com	Spt	Com	Gillnet	Freshwater	Spt	Com
Coho																				
Wahkeena Pond	Tanner Cr	Wahkeena Pond	1987	28,944	145	570,909	599,998	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wahkeena Pond	Sandy R	Wahkeena Pond	1988	13,117	184	1,039,785	1,053,086	6.68	0.0	0.0	0.0	0.5	4.2	1.1	5.8	4.7	35.9	40.5	3.2	4.2
Wahkeena Pond	Tanner Cr	Wahkeena Pond	low	29,975	1,465	1,068,804	733,705	0.02	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	0.0	33.3	33.3	0.0
Wahkeena Pond	Tanner Cr	Wahkeena Pond	1990	28,073	1,015	1,870,912	1,900,000	0.35	0.0	0.0	0.0	4.2	27.0	2.9	13.7	0.0	28.4	17.9	6.0	0.0
Wahkeena Pond	Tanner Cr	Wahkeena Pond	1991	24,445	515	1,474,818	1,499,778	0.36	0.0	0.0	0.0	3.1	0.0	0.0	0.0	0.0	66.7	30.2	0.0	0.0
Average				24,911	665	1,205,042	1,157,309	1.48	0.0	0.0	0.0	1.6	6.2	7.5	3.9	0.9	26.2	24.4	8.5	0.8
Summer Steelhead																				
regon	Innaha R	Sheep Cr(Grande Ronde)	1986	47,836	3,461	42,441	93,730	0.17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.8	56.3	0.0	0.0
regon	Innaha R	Sheep Cr(Grande Ronde)	1987	54,874	741	191,379	246,994	0.53	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	20.9	78.5	0.0	0.0
regon	Innaha R	Sheep Cr(Grande Ronde)	1988	54,896	1,078	193,684	249,458	0.26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	n o	66.0	0.0	0.0
regon	Innaha R	Sheep Cr(Grande Ronde)	1989	52,527	786	196,270	249,563	1.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.0	61.0	0.0	0.0
regon	Innaha R	Sheep Cr(Grande Ronde)	1090	94,390	1,610	146,808	243,008	1.04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.6	76.4	0.0	0.0
Average				60,665	1,571	154,116	216,552	0.60	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	32.3	67.6	0.0	0.0
regon	W - R	Big Canyon Cr	1900	104,900	1.2%	168,025	274,274	0.94	0.0	0.0	0.0	0.5	0.0	0.0	0.1	0.0	39.8	59.8	0.0	0.0
regon	Wallows R	Spring Cr (Wallows R)	1986	roe.495	4,632	386,001	599,116	0.70	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.0	48.0	0.0	0.0
regon	Wallows R	Spring Cr (Wallows R)	1987	158,709	2,675	360,941	522,425	0.52	0.0	0.1	0.0	0.5	0.0	0.0	0.0	0.0	34.3	65.2	0.0	0.0
regon	Wallows R	Spring Cr (Wallows R)	1988	157,015	5,225	388,636	550,876	0.21	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	35.0	64.9	0.0	0.0
regon	Wallows R	Spring Cr (Wallows R)	1989	158,109	1,909	140,909	300,927	0.96	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	36.6	61.1	0.0	0.0
regon	Wallows R	Spring Cr (Wallows R)	1990	111,439	1,637	123,437	236,513	1.05	0.0	0.1	0.0	0.3	0.0	0.0	0.0	0.0	42.7	56.9	0.0	0.0
Average				156,751	3,256	279,965	439,972	0.71	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.0	40.5	59.2	0.0	0.0
Oak Springs	Umatilla R	Umatilla R	1987	56,067	685	2,554	61,306	0.61	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	20.3	To.3	0.0	0.0
Oak Springs	Umatilla R	Umatilla R	1988	52,726	6,131	561	59,436	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
Oak Springs	Umatilla R	Meechem Cr	1989	56,034	1,984	1,663	59,671	0.93	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.0	83.1	0.0	0.0
Oak Springs	Umatilla R	Meechem Cr	1990	57,825	ml	1,131	59,547	am	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.1	79.0	0.0	0.0
Average				56,163	2,348	1,480	59,991	0.60	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	14.3	65.6	0.0	0.0